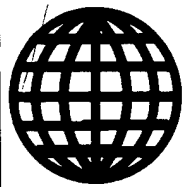


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21 SEPTEMBER 1992



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# **Environmental Issues**

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# Environmental Issues

JPRS-TEN-92-017

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**Global Ecological Monitoring Conference Held Near Moscow**

*LD1108060992 Moscow ITAR-TASS in English  
1931 GMT 10 Aug 92*

[By ITAR-TASS correspondent Lyubov Dunayeva]

[Text] Moscow, August 10 (TASS)—A news conference was held on Monday within the framework of an international conference "Global Ecological Monitoring" held in the Russian city of Dubna near Moscow.

The conference was addressed by American physicist Edward Teller, one of the creators of the SDI programme and the hydrogen bomb and Russian nuclear expert Mikhail Mescheryakov, one of the creators of the hydrogen bomb in the former USSR.

The 84-year-old American scientist said that the U.S. participation in the global ecological monitoring does not pursue the aim of signing documents, but, nevertheless, one of the main purposes of the conference is to reach an agreement on the use of modern weapons to resolve ecological problems.

The matter concerns the use of Soviet "SS-18" missiles and RS-20 missiles to monitor the ecological situation on the planet.

The conference is being attended by prominent scientists from Russia, China, India and other foreign countries.

**IWC To Hold General Meeting in Kyoto Next May**

*OW1108073492 Tokyo KYODO in English 0545 GMT  
11 Aug 92*

[Text] Tokyo, Aug. 11 (KYODO)—The International Whaling Commission (IWC) will open a five-day general meeting in Kyoto next May 10, the Fisheries Agency announced Tuesday.

It will be the first IWC meeting held in Japan since 1968, agency officials said.

The general meeting at the Kyoto International Conference Hall will be preceded by a meeting of the commission's scientific committee April 19 to May 1 and meetings of various subcommittees May 3 to 8, the officials said.

They said discussions at the general meeting are likely to focus on a French proposal to ban all whaling in Antarctic waters south of 40 degrees south latitude.

**Agreement Reached on Bering Sea Fishing**

*LD1608152392 Moscow ITAR-TASS World Service  
in Russian 1605 GMT 14 Aug 92*

[By ITAR-TASS diplomatic correspondent Igor Shubin]

[Text] Moscow, Aug 14— The Fifth International Conference on Conservation and Management of Marine Resources in the Central Part of the Bering Sea, which ended today in Moscow, has achieved a real breakthrough toward a solution to a complex issue affecting the interests of many states. After three days of work, delegations from Russia, the United States, Poland, China, Japan, and the ROK adopted a joint resolution stating that the conference's participating states will halt fishing of pollock in the central part of the Bering Sea for the next two years. Kirill Gevorgyan, deputy director of the Russian Foreign Ministry's legal department and chairman of the conference, told ITAR-TASS that the measure is essential because Bering littoral states and others with an interest are concerned at the noticeable decline in fish catches in the region. In 1989 the total take was 1.4 million metric tonnes, while the figure for the first half of this year came to a mere 11,000 metric tonnes. The conference's next gathering is scheduled for January next year, in Washington.

## REGIONAL AFFAIRS

**Southern African Countries To Aid Aid Zambia, Zimbabwe in Electricity***MB0108142892 Johannesburg SATURDAY STAR in English 1 Aug 92 p 6*

[By the Africa News Service]

[Text] Five southern African countries have agreed to combine their resources to avert a critical power shortage in Zambia and Zimbabwe.

The generating capacity of the Zambezi River, which supplies Zambia and Zimbabwe with hydro-electric power, is expected to fizzle out within months.

Power companies from South Africa, Zaire, Botswana, Zimbabwe and Zambia decided in Lusaka last week that power should be drawn from South Africa and Zaire to alleviate the situation.

Eskom [Electricity Supply Commission] chief executive Ian McRae said power should begin to flow across the Limpopo to southern Zimbabwe within six weeks.

A 50 MW powerline Eskom was building across the border at Beit Bridge was expected to be completed within six weeks, and supplies running through it by November.

Botswana had also agreed to facilitate the transmission of power to Zambia and Zimbabwe from South Africa.

A Botswana line would carry about 150 MW once completed.

Although Zaire was dependent on hydro-electric power, the drought had not affected the Zaire River's flow.

Zaire was expected to send about 150 MW to Zambia and Zimbabwe, McRae said.

## GHANA

**Biogas Project at Appolonia Commissioned***92WN0711A Accra PEOPLE'S DAILY GRAPHIC in English 8 Jun 92 pp 1, 8-9*

[Article by Kate Hudson]

[Excerpts] A 59 million Integrated Rural Energy and Environment Project (IREPA), aimed at using biogas as an alternative energy source for meeting energy needs was commissioned by Dr. (Mrs.) Mary Grant, PNDC [Provisional National Defense Council] member, at Appolonia, near Tema at the weekend.

The project which was started in 1987 was funded by the governments of Ghana and China and the United Nations Development Programme (UNDP). It includes a KVIP [expansion not given] place of convenience, potable water and digesters.

The biogas which is flammable gas, is produced when organic materials such as human and animal waste are fermented under anaerobic (oxygen deficient) conditions.

These organic materials are mixed with water and fed into airtight underground receptacles called digesters, where biological degradation of the organic materials take place resulting in the production of biogas.

The biogas produced from the digesters attached to the households, is used for cooking only, while biogas from the large community digesters is used to run a combustion engine to produce electricity for streets lighting among others.

In the process of producing the biogas, an effluent slurry is produced as a by-product and this, when applied to soil helps to improve soil fertility by providing humus which is an essential component of any fertile soil.

The project which represents the Ministry of Energy's commitment to develop biogas technology in the country is a pilot research and demonstration project which seeks to investigate the technical and socio-economic viability of biogas technology in Ghana and the Appolonia village was selected for the project mainly because of availability of raw materials and nearness to Accra to ensure easier monitoring.

Dr. Grant said Ghanaians are too familiar with the energy crisis which hit the world in the late 1970's and the early 1980s adding that the importance of the biogas as a renewable energy is reflected in the events of the late 1970s, when the astronomical increases in the prices of crude oil plunged the world into an energy crisis.

She stressed that the crisis manifested itself in the deteriorating balance of payment deficits, debts and general decay in socio-economic development.

The PNDC member noted that by 1981 Ghana was spending as much as 40 per cent of her export earnings to service oil imports thus reducing the country's capacity to satisfy other pressing development needs.

Dr. Grant said she was happy to note that the people of Appolonia are benefiting from the project which is the first of its kind in Ghana and one of the very first in the African continent and asked them to take advantage of the full benefits of the project, to improve sanitation in the area and raise their general quality of life. [passage omitted]

Mr. Ato Ahwoui, Secretary for Energy, said to minimise the destruction of the country's forests and environment, the Energy Minister has formulated a comprehensive programme of action in an attempt to arrest the situation.

The programme involves projects to improve energy efficiency of cook stoves, project to improve charcoal



production yields, projects to increase Liquefied Petroleum Gas (LPG) usage among households and institutions and projects to promote biogas development and usage, he said.

The Secretary disclosed that, between 1990 and 1991, over 110 public schools and public institutions all over the country had their kitchens converted from using firewood to LPG, while LPG consumption had increased from 5,500mt in 1990 to 11,000mt by the end of December 1991.

Mr. Ahwoi disclosed that in Ghana, the first real attempt to move the biogas technology from the laboratory to the field was made in 1986, following a visit to the People's Republic of China by the Head of State and Chairman of the PNDC, Flt-Lt. J.J. Rawlings, who invited the Chinese to assist Ghana to develop the country's potential in this area.

In his welcoming address, Mr. George Quaynor-Mettle, Deputy Greater Accra Regional Secretary, appealed to the chiefs and elders of the area to eschew the tendency of giving out land indiscriminately to certain individuals for the purpose of winning sand and asked the district assemblies to mount educational campaigns on the hazards of indiscriminate sand winning.

Dr. Grant later cut the tape and unveiled a plaque to formally commission the project and was also conducted round the project with other dignitaries.

## MADAGASCAR

### Locust Invasion Threatens 1 Million Hectares

EA0682120 Antananarivo Radio Madagascar Network  
in Malagasy 1600 GMT 6 Aug 92

[Excerpts] The most important news in the country today was the news conference given by Agriculture Minister Claude Andreas at his ministry headquarters in Antananarivo today. [passage omitted]

Minister Andreas also spoke about the fight against the locust invasion. The minister said that another news conference was to be held on 13 August by ministry officials on progress and plans.

It is known that swarms of locusts are devastating the southern part of the island from Bekily to Manja. The Tsiroanomandidy region had even felt their presence.

We were shocked today when Minister Andreas told us that up to 1 million, about 1 million, hectares of land might be totally devastated as a result of the locust invasion unless decisive emergency measures are taken by the relevant authorities.

The minister added that from 17 to 24 billion Malagasy francs are needed to confront the locust invasion. [passage omitted]

## MOZAMBIQUE

### Ministers Assess Rio Summit Results for Mozambique

92WN0696A Maputo DOMINGO in Portuguese  
12 Jul 92 p 13

[Report on press conference given by Minister of Mineral Resources John Kachamila and Minister of Education Aniceto dos Muchangos in Maputo]

[Text] Ministers of Mineral Resources and Education John Kachamila and Aniceto dos Muchangos, respectively, last week gave a press conference in Maputo on Mozambique's participation in the Earth Summit held recently in Rio de Janeiro, Brazil.

At the press conference, they emphasized the fact that at the summit, the whole world, through its political representatives, had made a solemn commitment to save the Earth and its inhabitants.

The two ministers, the first of whom is president of the National Committee on the Environment, emphasized the importance of the agreements signed there and assured the journalists present that Mozambique would do everything in its power to implement the planned projects. [passage omitted.]

John Kachamila said that at the first level, the conference's objective was to discuss the environment, but the Third World said no, it was necessary to discuss other types of problems, such as poverty, war, debt, etc.

"It involved discussing not only environmental issues, but other social and economic problems as well," the official said, adding that this was why the name of the conference was the Conference on the Environment and Development.

Before the conference, committees were created to study resolutions, prepare agreements, and prepare for the conference itself, and Mozambique participated actively in these tasks and to such an extent that it held one of the vice president positions.

Thus, according to Kachamila, even before the conference, two agreements had been prepared, one on the climate and the other on biodiversity.

While preparation of the agreement on the climate was easy, the one involving biodiversity was more complicated, which is why some countries, most notably the United States, did not sign the latter.

### Mozambique's Commitment

John Kachamila said that Mozambique signed all the agreements because the country is committing itself to implement those agreements. "They are statements and directions involving programs to be fulfilled."

According to the mineral resources minister, one of the documents is Agenda 21, a program that the countries that signed it have promised to implement.

The agreement on the climate addresses the global problems related to that issue, such as the greenhouse effect, by reducing carbon dioxide emissions into the atmosphere; the problems involving destruction of the ozone layer; and the problem of the burning of the rain forests.

As part of the agreement, Mozambique will have to create specific programs to allow the implementation of all possible actions, since "in fact, we participated in the environmental statement, but our country is poor and is not very strong."

For example, with respect to the serious problem of desertification, "we are going to great lengths to reduce its effects, and regarding the forests, we have to improve our agricultural methods, teaching our people not to burn," he said.

With regard to biodiversity, again according to John Kachamila, there are related issues. Our country has little capacity to contribute to the preservation of endangered species because it does not possess new technologies. "One of the reasons that led the United States not to sign this agreement was precisely the technology question."

Since Mozambique does not have the financial capability to implement most of the anticipated programs, the mineral resources minister says that "the country will have to present plans."

Referring to Agenda 21, an agreement also signed by our government, he said that it contains more than 100 programs, and Mozambique must look only at those of concern to it.

The implementation of many projects that are to be formulated will "very much" depend on international support, and there are already indications that with such support, it will be possible to implement many programs.

#### Which Priorities?

Responding to this question, Education Minister Aniceto dos Muchangos said that many priorities were defined, even during the preparation for the Rio Conference.

"Awareness of environmental problems has increased. The National Committee on the Environment was created during the same period as the conference, and a series of measures were being taken throughout the preparations for the conference."

According to Aniceto dos Muchangos, the greatest achievement of the Rio Conference was the global commitment on environmental problems. "A global political commitment was made by all the nations, which will make possible other commitments in each country," he said.

There is a series of institutional measures that should be taken, and the Education Ministry itself will have to see how environmental education programs can be created, through both public and private education.

#### Forests

During the discussion on forests at the summit, the primary focus was on the rain forests. Many countries, such as Brazil and the African and Asian countries, look to their forests as sources of financing.

But after some debates over the years, another type of forest, like those in the northern hemisphere, has also been introduced, the function of which is different from that of the rain forests.

The mineral resources minister said that the greatest difficulty arose when the developed countries insisted on global management of the rain forests, while the Third World countries said that management of each of them should be done by the countries that possess them.

After a debate characterized as "heated," it was accepted that there would be no agreement on rain forests and that there would be alternatives in the utilization of the rain forests, since these are the national wealth of each country.

With respect to forests, Kachamila pointed out that the forest in Mozambique is not a rain forest like that of Zaire of Gabon, but rather "a forest that contributes to the national ecology, which preserves the national species."

The president of the National Committee on the Environment pointed out that our country has the task of protecting the forest, taking into account the problems of the drought, which threaten the national forests. "We must take rapid action, with a view to preserving our forests," the minister said.

He also made it clear that long before the realization of the Environmental Conference, the country had already taken steps in the area of environmental conservation with the support of the United Nations.

#### Education and the Environment

Taking the podium at the press conference, the education minister said that his sector was already engaged in formal environmental education, "although in a very dispersed manner."

In the future, Aniceto dos Muchangos said, his ministry's attention would be concentrated on including environmental programs in the textbooks and teaching programs.

## NIGERIA

### EEC Oil Consumption Tax Seen as Adding to Africa's Burdens

AB0208134592 *Lagos Voice of Nigeria in English*  
1030 GMT 23 Jul 92

[Ishola Dada commentary]

[Text] As if the numerous economic malaise facing Africa is not enough, the European Community is now seeking to add more to the continent's burdens. This time around, the added burden is the environmental levy to be imposed by the community on oil consumption in Europe.

Naturally, the question a casual observer may be tempted to ask is what effect will such a pact have on the African Continent? A careful appraisal of the tax and verification of the decision to impose a levy and its motive will show that this operation will have a far-reaching effect on the ability of African countries, especially those amongst them which are oil producing nations, to generate adequate foreign exchange. The levy, otherwise known as Eurotax, seeks to impose a kind of tax on oil consumption with the main aim of limiting crude oil exports from oil-producing countries in general.

This policy, if translated into concrete economic terms, needs less crude oil exports, particularly from African countries whose major foreign exchange earnings come from oil export. For these countries, of which Nigerian is one, it will mean less hard currency to meet their financial obligations not only to their people, but also for external commitments.

Ironically, on the other hand, it will boost the coffers of the already fabulously rich European nations at the expense of the poor African countries. However, in this game of oil consumption taxation, what the West seems to forget is the fact that the decision is capable of inflicting injuries on the interests of both sides.

For example, while it is true, as the European Community seems to be arguing, that any group of country reserves the right to take any decision which it believes is in its interest, such a decision must not infringe on the interest of others. The fact in this particular case is that the issue here has gone beyond the assertion of rights. The imposition of the levy on oil consumption touches the mainstay of oil-producing African countries and therefore jeopardizes their national interests.

The fear of African oil-producing countries which is genuine is that an environment tax on oil as proposed by the European Community can be another ploy to further strangle them economically by reducing substantially the demands for their crude oil. And this is at a time when African oil-producing nations need every cent of the

foreign exchange they could garner from their crude oil exports for their much needed development and other international obligations.

The European Community is trying to justify the levy on oil as part of its spirited effort to ensure a cleaner environment in line with the proposal of the recent Rio Earth Summit. But is not true to say that the oil consumption alone constitutes a major cause of environmental pollution. What about radiation from plants producing destructive weapons such as nuclear plants dotting most parts of Europe or the nuclear and toxic waste being dumped on the African Continent and other developing countries by Western countries? The desire for a cleaner environment is worldwide. The African nations also desire a cleaner environment and good healthy living.

But the cost of a clean and safe environment should not be heaped on the Africans and other developing nations under whatever guise. If this is done, these poor nations will sink into more debt and underdevelopment. Consequently, the economic burden of the African countries will rise higher if at this point in time the demand for their crude oil is drastically curtailed through the imposition of environmental levy on oil consumption. Besides, the levy will certainly result in a dwindling revenue for the producing African countries, thus limiting their purchasing power to acquire goods and services of the European countries.

More importantly, perhaps, a dwindling revenue for the African countries has the potential of reducing the ability of some of these countries which are heavily indebted to the Western creditors to redeem their repayment pledges. In a case like this where there can be only losers but not winners, it might be pertinent to suggest that it is necessary for both parties to find a way of meeting each other half way on this issue.

As the conclusion of the recent Cairo meeting of the African Petroleum Producers Association, APPA, tended to suggest, the imposition of the levy on oil consumption will hurt both the European consumers and the African producers. Indeed, the politics of taxing oil consumers is most inappropriate now. The decision should be reviewed in the interest of cordial economic relations between Europe and Africa.

## SOUTH AFRICA

### Study Aims To Improve Legislation on Hazardous Waste Disposal

92WN0704A *Johannesburg ENGINEERING NEWS*  
in English 3 Jul 92 p 7

[Article by Kim Trollip]

[Text] A strategy for the management and disposal of the two million tons of hazardous waste generated every year

in South Africa, has been handed to the Department of Environment Affairs, but legislation is still at least two years away.

Of all the environmental problem areas which have come into focus around the world, hazardous waste has been the slowest to develop direction and regulatory mechanisms.

This is the case in South Africa where air and water pollution legislation has been on the statute book for many years, but legislation on hazardous waste is still incomplete and insufficient.

The two and a half year study under the leadership of Dr. Graham Noble of the CSIR [Council for Scientific and Industrial Research] is aimed at correcting this position.

The suggestions contained in the study will have to go through the mechanisms of parliament before being legislated and it is therefore up to industry itself to act responsibly and minimise hazardous waste pollution in the interim.

#### The Problems

The study found that there is almost no transport management of hazardous waste and malpractice is common.

Waste processing plants are the exception rather than the rule and many processes are primitive.

There is a shortage of waste disposal sites and hazardous waste is sometimes disposed of at sites not suited for the purpose.

At more than half the sites inspected, conditions could lead to contamination.

As a result of insufficient legislative management the majority of the hazardous waste generators spend a minimum on waste management.

There is a serious shortage of trained and experienced labour at all levels of waste management.

The study concludes that South Africa's international trade could be adversely affected if the management of hazardous waste does not improve.

Some local industries have already lost markets as a result of their inability to comply with clients' requirements for waste practices in South Africa.

#### Priorities

The priorities highlighted in the investigation are to reduce at source the amount and dangerous characteristics of all waste; to recycle, re-use or recover resources from waste where economically feasible; to treat the remaining unavoidable waste where feasible and to dispose of the residue in a way that will be safe now and in future.

Minister of Environment Affairs Louis Pienaar says hazardous waste disposal is likely to become one of the most difficult global environmental issues during this decade.

"We therefore want to formulate a proper action plan now, before hazardous waste disposal becomes an unmanageable problem in South Africa."

He says the study will enable the development of a strategy and management plan that will ensure the existence of expertise, facilities, legislation and regulations to deal with hazardous waste safely and responsibly.

#### Transvaal Game Farmers Urged To Cull Animals

92WN0686A Johannesburg THE STAR in English  
8 Jul 92 p 9

[Text] The Department of Agriculture has recommended that game farmers in the drought-stricken northern and north-eastern Transvaal cull up to 60 percent of their game to prevent animals from dying of thirst and to conserve the soil.

And several herds of endangered sable antelope are at risk because they are selective tall-grass feeders and the grass is rapidly becoming depleted.

Dr. Hymie Ebedes, a specialist extension officer for game ranching in the Transvaal, said the far northern and north-eastern Transvaal were in a critical disaster situation.

Apart from the lack of grazing, pans and streams had dried up and there was a shortage of drinking water. Some areas had had no rain in two years, with the result that perennial grasses did not grow.

He said that if a large percentage of animals were not culled, many waterbuck, giraffe and nyala could die.

At a recent meeting of the Letaba Sable Study Group, it was decided to capture animals and feed them in pens. They could also be moved and fed elsewhere.

#### Cape Forestry Development Threatens Natural Ecosystem

92WN0686C Johannesburg THE NEW NATION  
in English 3-9 Jul 92 p 8

[Text] Massive forestry development in the north-eastern Cape is threatening rivers and indigenous plants. The planting could extend as high as the southern Drakensberg escarpment, which is an important water catchment area for South Africa and Transkei.

The disruption of water resources is particularly worrying to Cape Nature Conservation (CNC) officer, Jan Vlok. "The streams there flow into three perennial rivers in Transkei. It is important to maintain these rivers as people downstream do not have water holes or pumps.

"I am worried about the vleis and marshes—they could dry up and disappear."

He said the highest diversity of plant and animal species, as well as the most rare species, were found in the wetlands and upper plateaus.

#### Communities

Conservation officials fear large plantations of exotic trees will also crowd out indigenous species, create a fire hazard, irrevocably destroy the natural grassland and squeeze out communities that have farmed the land for decades.

Large scale forestry has come to the area in the form of the giant Mondi Paper Company which has bought 167 farms in the Elliot and Maclear districts. Farmers in the area are keen to sell, since stock theft is increasing and the costs of transporting stock to far-away markets are rising constantly.

Mondi may shift its focus from high-profile forestry development in the eastern Transvaal to concentrate on the north-eastern Cape. While the region welcomes the investment, conservation officials are wary of Mondi's track record in the eastern Transvaal, where the company was accused of putting profits before concern for the environment.

North East Cape Forests (NECF), managed by Mondi, plans to plant 80,000 hectares of land over the next 10 years. The rolling hills and valleys of the region, now covered with water conserving veld, will be covered by a thirsty thatch of trees.

#### Water

Indigenous species of animals and birds will have to adapt as long grass, sunny open spaces and flowing streams give way to shady plantations and limited running water.

NECF regional manager, Gawie van Wyck, said Mondi has learnt from mistakes made in the Transvaal. Two rivers flowing into Kruger National Park no longer run in the dry season, after the upper catchment area was forested.

"There were no rules when that was planted over 40 years ago. Now there are conservation norms," he said.

Conservation officials are struggling to plan while land use patterns change from agriculture to forestry.

In addition to the 167 farms bought by the NECF, local farmers have applied for forestry permits, covering a further 25,000 ha.

"The problem is we don't know where it will stop. If we know it is 100,000 ha we can plan for it," Jan Briers, an officer from CNC's regional office in Port Elizabeth.

"We don't know if it will be 300,000 and we can't plan. Our biggest problem is we don't know the limit."

Phillip Ivey from the Flora Committee of the Botanical Society of South Africa, said he was concerned that the reduced water supply would affect natural vegetation in the area. He called for an environmental impact study, since there was poor knowledge of species in the area.

"This lack of knowledge could result in plant species which are endemic to the area being threatened. Firstly, the introduction of exotic trees to the area will destroy the grasslands by totally shading the ground, especially as these are likely to be pulp plantations with no pruning of lower branches.

"Secondly, grasslands require regular fires to ensure the regeneration of vegetation. Fires are excluded from afforested areas," Ivey said. The policy of no burning would be detrimental to farmers who had not converted to forestry.

#### Defends

The conservation officer for NECF, Felicity Weir, defends the company's record on environmental practices.

For example, inroads had been made in the removal of alien vegetation like wattle and poplar, while farmers did not root out exotic species.

A study of the fish, birds and mammals indigenous to the area was being compiled. Buck species had been reintroduced to the natural heritage sites at Prentjiesberg and Rush Valley Endorheic Pan.

"In the field it is difficult to see that seepages, where most of the rare species are found, are not planted," Weir concedes.

The Department of Forestry, which does inspections, said NECF had a fair track record though they had made some mistakes. Initially they planted too close to streams, drove lorries through wetlands and their terracing broke, exacerbating erosion.

#### Bophuthatswana Holds Good Record for Conservation

92WN0686B Johannesburg THE NEW NATION  
in English 3-9 Jul 92 p 8

[Text] Despite a bad human rights record, Bophuthatswana is way ahead on issues of nature conservation compared to other homelands.

The homeland's Parks Board embraces concepts of sustainable utilisation of natural resources and preservation of pristine areas in its environmental projects. Evidence of this is the success of Bop's three game parks, three game reserves and two nature reserves.

These are the Pilanesberg National Park (55,000 ha) north of Rustenburg; Borakalalo National Park (15,000 ha) north of Brits; Maria Moroka National Park (5,000 ha) east of Bloemfontein, Botsalano Game Reserve (5,800 ha) north of Mmabatho; Madikwe Game Reserve

(70,000 ha) on the Botswana border near Gaborone; Lotlamoeng Dam Nature Reserve near Montshiwa; and the Taung Skull Cultural Reserve near Taung.

All these have been established with the aid of the homeland government and such well-known ecologists as Tony Ferrar, Rams Rammutla, and Roger Collinson.

Bop says increased tourism to the homeland's conserved areas is destined to be a major boost to the communities that live close to the game reserves and parks.

However, at present, most of the surrounding communities are still desperately poor, and it could be some time—if ever—before the beneficial effects of the anticipated eco-tourist boom impacts on their lives.

### **Researchers Find 'Novel' Method for Detoxifying Heavy Metal Waste**

92WN0704B Johannesburg *NEW NATION* in English  
3-9 Jul 92 p 10

[Text] Researchers at Rhodes University have discovered a novel method of decontaminating vital water resources polluted by metal waste.

A university statement said the method used biologically-based processes which could be an economic and efficient alternative to traditional chemical methods of metal removal.

A PhD student in the department of Biochemistry and Microbiology, Dean Brady, under the supervision of department head Professor Johan Duncan, examined the possibility of using yeast as an organism for heavy metal accumulation from industrial effluents.

It was found that yeast, a very cheap and readily available waste product from brewing and baking industries, was effective in the removal of a wide range of metals from solution and was relatively efficient at detoxifying chromium laden tannery effluents.

Heavy metal waste—one of the biggest pollutants of water in the country—is highly toxic to people, animals and fish. In the case of the mining industry, the wastes might also represent a significant loss of valuable metals.

Removal of the metal ions had consequently become a major priority in the recycling of vital water resources.

The statement said further investigations on the treatment of different industrial effluents were in progress and the possibility of recovering metals from wastewaters produced by the mining industry would also be investigated.

If the pilot studies proved successful, they would, at a later stage, be scaled up to industrial treatment plants.

Duncan said: "This novel technology represents a means of using a waste product of one industry to facilitate the

re-use of a toxic effluent from another industry and is an example of the tremendous scope for biotechnology in the South African context."

As a result of its success the project had attracted substantial financial support from the Water Research Commission of South [passage omitted]

The current drought has once again brought South Africa's water shortage into sharp focus.

Although water restrictions are not expected in the foreseeable future, the Rand Water Board (RWB) faces a tremendous challenge to supply the future needs of the fast growing population.

Hundreds of millions of rands have been spent lately to meet the demand for purified water in the next few years. Soon much more money will have to be spent.

The RWB will open a new water purification plant at Vereeniging which has just been completed and is designed to supply the needs of the board.

### **Minister Warns Country on Water Situation**

MB1708151492 Johannesburg *Radio South Africa*  
Network in English 1100 GMT 17 Aug 92

[Text] The minister of water affairs and of forestry, General Magnus Malan, has warned that South Africa is entering a phase in which the demand for water would exceed its availability. General Malan said at a conference on Water Week in Pretoria that much emphasis was being placed on the political arena and people were inclined to forget about the importance of water management. He said it was important that all South Africans should be aware of the water situation in this country. Gen. Malan said the current drought had played a large role in making people more aware of good water management.

## **ZAMBIA**

### **Government Appeals for Help on Copperbelt, Kafue River Pollution**

92WN0710C Lusaka *TIMES OF ZAMBIA* in English  
3 Jun 92 p 1

[Text] Air and water pollution on the Copperbelt and Kafue have reached dangerous proportions prompting the Ministry of Environment and Natural Resources to appeal for donor aid to contain the situation.

Environment and Natural Resources Minister Mr. Kelly Walubita said in Siavonga yesterday, his ministry and the Environmental Council of Zambia (ECZ) were not effective enough to tackle the problem.

When he opened a two-day workshop for conservation experts and major donors, Mr. Walubita regretted that the council was toothless.

He noted that air in the mining townships was heavily polluted and urgent measures had been taken to trap poisonous gases.

The ministry had a report that Kafue and Kafubu rivers were the dirtiest.

The ECZ and the ministry should be strengthened or else they would merely become spectators.

It would be folly to wait for a disaster before instituting remedial measures and so Zambia must act now.

Zambia should learn much from developed nations now caught up in ecological calamity.

In Kafue there were about 10 industries discharging effluent into the river.

And acting representative for World Bank in Zambia Mr. Isaac Morethi said environmental issues were receiving attention on global scale.

The workshop coming after the world summit in Rio de Janeiro was timely because participants would come out with resolutions tailored for local environment.

There was no way one could expect sustainable economic development without proper management of resources.

An expert at the United States Department of Agriculture Mr. Carl Mabbs-Zenol said air quality presented a challenge that was greater for Zambia than for most developed nations.

The presence of a strong mining and smelting industry had brought the potential for obnoxious and dangerous pollution.

About 200,000 tonnes of sulphur dioxide were emitted annually, he said.

He cited excessive concentrates of cadmium, a poisonous substance found in fresh vegetables in Kabwe.

#### **Industries Given Reprieve From Pollution Act**

92WN0710B Lusaka TIMES OF ZAMBIA in English  
5 Jun 92 p 9

[Text] Polluting industries have won temporary reprieve from the punitive Environment and Pollution Act.

Instead of being charged for polluting the environment the National Environmental Council will start educating management on the need to ensure a clean environment.

Environment Minister Mr. Keli Walubita said during the week if the Act was to be effected immediately, 60 percent of industries in Zambia would be closed down right away.

He says most industries do not know that their effluent or gaseous emission can bring them large profits through recycling.

Some recycling firms in Germany had indicated they would be interested in setting up businesses in Zambia to help turn waste into something useful.

He gave examples of Zaffico which threw away a lot of pine and eucalyptus wood which could be turned into pine oil or eucalyptus disinfectant. The same plant could use orange and lemon peels for making disinfectants.

Mr. Walubita appealed to Forestry Department to stop evicting people from forests.

He was aware that the people were squatting on the land but urged officials to wait so forests could be redemarcated.

"Some of the forests are run down and are no longer worth calling forests. My ministry is reviewing these settlements."

#### **Nitrogen Chemicals of Zambia Embarks on Pollution Control Program**

92WN0710A Lusaka TIMES OF ZAMBIA in English  
10 Jul 92 p 2

[Text] Nitrogen Chemicals of Zambia (NCZ) has embarked on a three-year plan to reduce pollution and the project will cost about \$2m.

NCZ controller of personnel services Mr. Andrew Kafuta announced this during the conservation and tourism week function in Kafue at which Lusaka Province Minister Mr. Elias Chipimo was guest of honour.

Mr. Kafuta said NCZ was committed fully to protection of the environment and that was why it had embarked on the programme.

"We at NCZ do not only recognise the importance of conserving the environment but are also taking measures to reduce pollution," he said.

A total of \$840,000 would go into reduction of levels of nitrate, coal dust, oxides of nitrogen and sulphur to those acceptable by world standards.

Another \$1.14m had been earmarked for rehabilitation of effluent and storm water sewers as well as installation of effluent abatement equipment.

The same would be used to construct an additional lagoon to receive discharges of a mixture of coal dust and calcine at a cost of \$3,000 even though the current ones were still sufficient.

### **ZIMBABWE**

#### **Wildlife Department Reports on Poacher Arrests**

MB1808191992 Johannesburg SAPA in English  
1839 GMT 18 Aug 92

[Text] Harare, August 18 (SAPA)—As many as 38 poachers were arrested in Zimbabwe in the first five

months of the year and 21 rhino horns and 18 elephant tusks recovered, Deputy Minister of Environment and Tourism Oppah Rushesha said on Tuesday.

Receiving a ZD12,000 [Zimbabwe dollar] facsimile machine on Tuesday from the Canadian International Development Agency (CIDA) for the Department of National Parks and Wildlife Management, Ms Rusheda said the department was fighting against sophisticated poachers to preserve endangered species such as black rhino and elephant.

Ms Rushesha, as reported by the ZIANA news agency, said the machine, to be used in anti-poaching activities in the lower Zambezi Valley, would help store information, collect data, and speed communications in investigations in Zimbabwe and other countries.

She said the department worked closely with neighbouring protection units to catch cross-border poachers.

"The poachers are prepared to risk even their lives because there is a lot of money involved," Ms Rushesha said.



**Chemical Industry Works Out Antipollution Plan**  
40101023A Beijing CHINA DAILY (BUSINESS  
WEEKLY) in English 15 Jun 92 p 4

[Article by Zhang Yu'an]

[Excerpts] One of China's worst polluters, the chemical industry, has worked out a plan to reduce the amount of filth it produces.

A Ministry of Chemical Industry official said the industry also seeks to maintain growth to better protect the environment.

The plan calls on large and medium-sized chemical firms to increase their use of recycled-water by 25 percent; reduce their volume of waste water released by 30 percent; and cut discharge of pollution-making materials in major chemical products by 20 percent on the 1990 figure by 1995.

Tight controls will be implemented on the discharge of pollution-causing elements of heavy metals, radioactive and other organic materials.

Discharge of pollution-making water, materials and gas should all reach State standards in tourism cities and State-protected areas.

Sewage disposal and waste gas harnessing should be increased by 20 and 15 percent respectively in 1995 from 1990 figures while one-fifth of the industry's firms should reach the standards of clean factories.

The ministry will increase investment and spread the use of new technology in environment protection to ensure the goals are realised. [passage omitted]

The ministry has spent 7.2 billion yuan (\$1.31 billion) on environment protection in the industry since the early

1980s. And special technicians involved in the industry's environment protection now number 2,500. [passage omitted]

**Liaoning Province Issues 1991 Environment Report**

SK1208103492 Shenyang LIAONING RIBAO  
in Chinese 21 Jun 92 p 2

[Communique on Liaoning Province's environmental conditions in 1991 published by the Liaoning Provincial Environment Protection Bureau—date not given]

[Text] According to the 11th article of the "PRC Environmental Protection Law," "administrative departments in charge of environmental protection under the State Council and the provincial, autonomous regional, and municipal governments should publish communiques on environmental conditions on a regular basis." Following is the "Communique on Liaoning Province's Environmental Conditions in 1991."

**1. Discharge of 'Three Wastes'**

[Discharge of Waste Water] The province's total volume of discharged waste water in 1991 was 2.11 billion tons, which was a 5.9 percent decrease from 1990 and which ranked the province fifth in the country. Of this volume, industrial waste water totaled 1.51 billion tons, an 8.2 percent decrease from 1990. The discharge of industrial waste water for producing per 10,000 yuan of output value was 117 tons. The industrial waste water disposal rate was 39.7 percent, showing a 9.7 percent increase over 1990. The volume of waste water discharged from daily life was 600 million tons, which was basically not treated.

The volume of major pollutants in the discharged industrial waste water was as follows:

Pollutant	Unit	1991	1990	Increase of Absolute Value	Increase of Relative Value %
Mercury	kg	5,713	5,550	163	2.8
Cadmium	kg	23,420	21,710	1,710	7.1
Hexed chromium	kg	13,513	18,580	-5,067	-40
Arsenic	kg	20,692	20,530	162	
Lead	kg	58,337	50,870	7,467	12.8
Phenol	kg	914,085	857,310	56,775	6.2
Cyanide	kg	264,413	297,060	-32,447	-12.3
Petroleum	kg	6,462,327	6,608,320	-145,995	-2.3
Chemical oxygen demand	kg	476,606,469	507,215,230	-30,608,761	-6.4

[Discharge of Waste Gas] The province's total volume of discharged waste gas in 1991 was 895.8 billion standard cubic meters, registering a 9.2 percent increase over 1990 and ranking the province first in the country. Of this volume, industrial waste gas was 783 billion standard cubic meters, accounting for 87.4 percent of the total.

The industrial waste gas disposal rate was 74.9 percent, a 6.9 percent increase over 1990. The discharge of industrial waste gas for producing per 10,000 yuan of output value was 6.06 standard cubic meters. The industrial dust recovering rate was 83.5 percent, a 6.7 percent increase over 1990. The discharge of sulphur dioxide, the

major pollutant in waste gas, was 1.068 million tons, a 9.5 percent increase over 1990. The discharge of soot was 1.014 million tons, a 3.4 percent increase over 1990.

[Industrial Residue] The volume of industrial residue produced in the province was 69.39 million tons in 1991, showing a 6.4 percent decrease from 1990 and ranking the province first in the country. The volume of the industrial residue that had been recycled in a comprehensive way was 19.04 million tons, a 3.7 percent increase over 1990; and the comprehensive recycling rate was 27.4 percent, a 2.8 percent increase over 1990. The volume of stored industrial residue was 39.66 million tons, accounting for 57.1 percent of the total. The volume of disposed industrial residue was 10.27 million tons, accounting for 14.7 percent of the total. The volume of industrial residue that had been discharged was 750,000 tons. For creating each 10,000 yuan of output value, 5.17 tons of industrial residue were produced. The volume of industrial residue accumulated over the past years was 1,195,160,000 tons, which required 51.57 million square meters of land to store.

## 2. Environmental Quality

[Quality of Water Environment] The environmental quality of the major rivers was basically under control in 1991. In general, the density of major pollutants, such as petroleum, volatile phenol, and various oxygen demanding materials, did not show notable changes, but the pollution of most rivers remained serious. In 1991 the various pollution indexes of the Dandong section of Yalu Jiang met the third-level standards during the dry season, and the water quality was relatively good. The various monitored sections of Hun He and Taizi He exceeded the third-level standards for chemical oxygen demand, petroleum, and volatile phenol, and the water quality was rather poor. Of these sections, the pollution of the Benxi section of Taizi He was the most serious, with its volatile phenol exceeding the standard by 37.0 times and petroleum exceeding the standard by 20.5 times. In the Shenyang section of Hun He, the biochemical oxygen demand, petroleum, and volatile phenol exceeded the standards by 12.6, 9.1, and 9.4 times, respectively, and the density of the chemical oxygen demand was 136 milligram/liter. In the Tieling section of Liao He, the chemical oxygen demand and biochemical oxygen demand exceeded the third-level standards by 8.6 and 2.0 times, respectively. In Tieling and Shenyang sections, the content of suspended substance/silt was 1,925 milligrams/liter and 2,243 milligrams/liter, respectively. In the Jinzhou section of Daling He, the chemical oxygen demand and biochemical oxygen demand exceeded the third-level standards by 9.7 and 5.3 times, respectively. In the Panjin section of Daliao He, petroleum, volatile phenol, and chemical oxygen demand all exceeded the third-level standards.

The water quality of major reservoirs was basically good. Except for the Senwo Reservoir, the water quality of various major reservoirs met the state standard for drinking water source.

The major pollutants in coastal water were inorganic nitrogen, petroleum, and oxygen demanding materials. The Jinxi coastal water, with its chemical oxygen demand exceeding the first-category standard for sea water quality, met the second-category standard for sea water quality. The Dandong coastal water, with its petroleum pollution exceeding the second-category standard for sea water quality, met the third-category standard for sea water quality. The Jinzhou coastal water, with its inorganic nitrogen pollution exceeding the second-category standard for sea water quality, met the third-category standard for sea water quality. In Dalian coastal water, the inorganic nitrogen exceeded the third-level standard for sea water quality by 0.3 times, but the inorganic nitrogen, petroleum, and chemical oxygen demand of Dayaowan coastal water all met the first-category standards for sea water quality. The inorganic nitrogen pollution of Yingkou and Panjin coastal water exceeded the third-category standard for sea water quality by 3.0 times, and their chemical oxygen demand also exceeded the third-category standard.

[Quality of Urban Atmospheric Environment] The quality of the atmospheric environment throughout the province was basically stable in 1991, and some localities showed improvement. Compared with 1990, the amount of dust and suspended particles declined, and the amount of sulphur dioxide, nitrogen oxide, and carbon monoxide did not show notable changes. The province's monthly average of dust of the 12 cities in the province (excluding Panjin and Jinxi) was 27.4 ton/month per square km, exceeding the provincial-controlled standard (8 tons/month per square km) by 2.4 times, but showing a 6.5-percent decline from the preceding year. Anshan recorded the highest amount, exceeding the standard by 4.4 times. The province's average daily amount of the total suspended particles of the year was 0.34 milligrams/standard cubic meter, exceeding by 0.1 times the state second-level standard for the quality of atmospheric environment. Chaoyang city registered the highest amount, exceeding the standard by 0.7 times. The province's average daily amount of sulphur dioxide was 0.09 milligrams/standard cubic meter, exceeding by 0.5 times the state second-level standard for the quality of atmospheric environment. Benxi registered the highest amount, exceeding the record by 2.0 times. The average daily amount of nitrogen oxide and carbon monoxide of the province was 0.06 milligrams/standard cubic meters and 1.8 milligrams/standard cubic meters, respectively, both meeting the state second-level standard for the quality of atmospheric environment.

[Quality of Urban Noise Environment] In 1991 the areas where industrial enterprises were concentrated and the major traffic lines of the 12 cities of the province (excluding Panjin and Jinxi) met the noise control standard. Noise in special residential areas was 50 decibels, exceeding the standard by 5 decibels; that of the areas where cultural and educational facilities for the people were concentrated was 54 decibels, exceeding the standard by 4 decibels; that of the first-category mixed areas

was 62 decibels, exceeding the standard by 2 decibels; and that of commercial central areas was 65 decibels, exceeding the standard by 5 decibels. All these figures showed no notable changes as compared with the preceding year.

### 3. Environmental Construction and Pollution Control

[Control of Pollution Sources] In 1991 the province spent 514,044,000 yuan in controlling environmental pollution, an increase of 33 percent over 1990. The province arranged 1,689 pollution control projects, of which 1,491 were completed, 88.2 percent of the total. Of the total, 411 were waste water control projects, 846 were waste gas control projects, 74 were solid waste control projects, 273 were noise control projects, and 85 were the projects of other purposes. After these projects are completed and commissioned, the province will be able to increase its annual waste water treating and utilizing capacity by 229,610,000 tons, waste gas treating and utilizing capacity by 35.1 billion cubic meters, and solid waste treating and utilizing capacity by 1.37 million tons.

[Comprehensive Utilization of "Three Wastes"] In 1991 the province arranged 28 key projects on comprehensive utilization of "three wastes," with the total investment reaching 71.18 million yuan. The output value of the products utilizing the "three wastes" amounted to 1.107 billion yuan, and the profits from these products amounted to 306 million yuan.

[The Benxi Pollution Control Project] In 1991 Benxi city fulfilled the two-year pollution control plan in an all-round way. The city arranged 157 million yuan of investment for pollution control projects, of which, 136 million yuan was consumed. The city arranged 27 key pollution control projects and achieved remarkable environmental and economic benefits after bringing seven smoking chimneys and nine polluted rivers under control. In the city proper, the amount of dust in the air declined from 50.2 tons/month per square km in 1989 to 47.6 tons/month per square km, and the total amount of suspended particles declined from 0.51 milligrams/standard cubic meter in 1987 to 0.42 milligrams/standard cubic meter.

[The Completion of the Project of Building 500-square-km Smoke Control Areas and 21 Demonstration Counties and Enterprises and Controlling Four Seriously Smoke Polluted Areas] Aimed mainly at improving the quality of the urban atmospheric environment, this project passed the provincial-level acceptance test in 1991. In the past three years, 1.54 billion yuan of investment was made in this project, and 716 million yuan of it was invested in pollution control projects. The province completed 39 key pollution control projects; rebuilt 3,719 boilers, 1,139 industrial kilns, 9,186 large kitchen ranges, and 5,541 restaurant stoves; completed building 523 square km of smoke control areas, eight environmental protection demonstration counties (districts), 11 environmental protection demonstration

enterprises, and three comprehensive pollution control demonstration projects; and improved the quality of the atmospheric environment of the "four major smoke polluted areas." According to statistics, in 1991 the indexes of the total suspended particles and dust declined by 20.4 percent and 12.4 percent, respectively, from those in 1987, and 217.86 million yuan in economic efficiency was produced in three years, accounting for 14.1 percent of the total investment. In the total economic efficiency, 137.27 million yuan was created by saving more than 800,000 tons of coal.

[Construction of Urban Public Facilities and Afforestation] In 1991 the coal gas utilization rate in the province was 69.9 percent, up 3.6 percent from 1990; the tree- and grass-coverage rate of the 14 cities directly under the province was 24.05 percent, and the per capita public green land was 3.65 square meters; and 72.78 million square meters of urban areas were accessible by central heating. Twelve urban environmental improvement projects of the province were appraised by the state as excellent and received commendation from the State Environmental Protection Bureau and the Ministry of Construction.

[Protection of Water Resources] Thanks to the strict management of Dahuofoang Reservoir according to laws, the number of pleasure-boats decreased by 33 percent, the oil discharged by such boats decreased by 50 percent, and the garbage left by tourists decreased by 62.5 percent. The province removed four restaurants and one farm from the protected area, thus making the water quality of the reservoir reach the second-category standard for surface water and making the transparency of the water one meter deeper. Liaoyang city prohibited the establishment of township and town enterprises which cause pollution on the upper reaches of Tanghe Reservoir and strictly controlled the development of pleasure-boats on the reservoir. The first-phase items of the comprehensive environmental improvement projects of Jinxi city's Wuli He and Dandong city's Dasha He were completed on schedule.

[Afforestation and Construction of Grassland] In 1991 the province afforested 2.744 million mu of land which were up to the standard, planted 283,700 mu of grasses by manpower, improved 85,100 mu of grassland, and improved 2,841,600 mu of land suffering soil erosion.

[Nature Protection Zones And Eco-agriculture] In 1991 the province had 30 natural protection zones covering an area of 10.54 million mu and accounting for 4.7 percent of the province's total. Of these zones, four were state level and 26 were local level. One hundred and fifty-seven experimental eco-agricultural zones were established during the year. The Environment Program of the United Nations named the Xian ecological breeding farm of Dawa County as one of "the best 500 in the world."

#### 4. Environmental Protection and Management

[Planning for Environmental Protection] The province mapped out the Eighth Five-Year Plan for environmental protection and the 10-year tentative plan. At the 24th meeting of the seventh provincial People's Congress that was held in September, Vice Governor Lin Sheng delivered a special report on implementation of the Seventh Five-Year Plan for environmental protection and the main contents of the Eight Five-Year Plan. The report was examined and discussed at the meeting. The environmental protection department and the planning committee dissolved the targets for the Eighth Five-Year Plan period and worked out the 1992 environmental protection plan. They strengthened the planned management of key construction projects, overall utilization projects, and technological transformation projects each involving more than 1 million yuan of investment.

[Laws and Regulations on Environment] In 1991 the province promulgated five local laws and regulations and three administrative regulations. Governor Yue Qifeng signed and issued the "Liaoning Provincial Methods for Comprehensively Using and Managing Industrial Waste Residue, Water, and Gas." The Provincial People's Congress Standing Committee approved and implemented the "Dalian City Environmental Protection and Management Regulations." The governments of Fushun, Yingkou, Tieling, and Jinxi cities issued the "Decision on Further Strengthening the Environmental Protection Work." The Shenyang city government issued and implemented the "Shenyang City Methods for Environmental Monitoring and Management."

[Management of the Program To Design, Construct, and Operate Pollution-Control Facilities and Main Parts of Construction Projects Simultaneously] In 1991 the province strengthened the management of the entire process of the program to design, construct, and operate pollution control facilities and principal parts of construction projects simultaneously. The province completed 1,863 projects with antipollution facilities. The investment in these projects totaled 4,504.03 million yuan. Of this, the investment in environmental protection projects reached 147.19 million yuan, accounting for 3.2 percent. Of the 1,670 projects that were examined, 1,367, or 81.8 percent, were developed along with the construction of pollution-control facilities.

[Charges for Discharge of Pollutants] In 1991 the province collected charges from 20,265 units for discharge of pollutants, an increase of 35.8 percent over 1990. Some 181.17 million yuan in fines for excessive discharge of the pollutants were imposed, an increase of 13.2 percent over 1990. Some 156.45 million yuan in subsidies for environmental protection and improvement were arranged.

[Improvement Within a Set Time] In 1991 the province completed 638 projects for improvement of environment defined by the governments at various levels within a set time. These projects involved an investment of 197.18 million yuan. Of these projects, four were assigned by the state and involved an investment of 26.1 million yuan. Ninety-three enterprises creating pollution were closed down, suspended, merged with other enterprises, or had their lines of production shifted, and 37 enterprises were relocated.

[Assessment of Overall Improvement of Urban Environment] In 1991, 14 cities comprehensively conducted assessment of overall improvement of urban environment. According to the results of the 1991 assessment, Dalian city won 74.47 points, 2.27 points more than that of last year. This ranked Dalian first in the province. Cities following Dalian in ranking were Yingkou, Dandong, Jinzhou, Shenyang, Fushun, Anshan, Tieling, Panjin, Benxi, Liaoyang, Chaoyang, Fuxin, and Jinxi.

[Target Responsibility System] In 1991 governments at all levels throughout the province signed 278 letters of responsibility for environmental protection. The Xinbin Manchu Nationality Autonomous County conducted experiment with the system of responsibility for fulfilling the defined targets of ecological improvement.

[Report and Registration of Water Pollutants and Issuance of Certificates for Pollutant Discharge] In 1991, 3,271 enterprises of the province reported and completed registration of water pollutants, and certificates for discharge of water pollutants were issued to 432 enterprises.

[Handling of Pollution Incidents] In 1991, 155 pollution incidents occurred throughout the province, causing a direct economic loss of 620,000 yuan. Compensation for pollution totaled 8.157 million yuan, and fines totaled 176,000 yuan.

[Letters and Visits] In 1991 the province handled 510 motions and proposals submitted by people's congresses and Chinese People's Political Consultative Conference committees at all levels, reconsidered three administrative cases concerning environment, handled 3,057 letters from the masses, and received 5,088 visitors.

[Environmental Science and Technology] In 1991 the province arranged 138 scientific research projects, which required 2.75 million yuan. Seventy-seven scientific and technological achievements were appraised and accepted, of which 41 won scientific research awards, including 11 provincial-level awards. The "Liaoning Provincial standards for sewage and waste gas discharge" and the "Liaoning Provincial standard for direct discharge of sewage into coastal water" won the provincial government's first prize of the scientific and technological progress award. Twenty-eight scientific and technological achievements, including the courtyard ecological-sound economic pattern of Dawa County, were disseminated.

[Environmental Monitoring] In 1991 the province strengthened the monitoring of major pollution sources and projects of urban comprehensive environmental improvement for quantitative evaluation and gained 208,288 pieces of monitored data. It carried out work to improve the urban atmosphere and surface water under monitoring, appraised good-quality laboratories and qualified laboratory technicians, and organized personnel to compile the "report on environmental quality for the Seventh Five-Year Plan period."

[Propaganda and Education] In 1991, 2,600 enterprises, 213 urban neighborhoods, and 4,134 primary and middle schools conducted education on environment. Benxi city established an experimental primary school for the education on environment, the first of its kind in the country. On 5 June, world environment day, Provincial Governor Yue Qifeng gave a television speech entitled "Persistently Develop Economic Construction and Environmental Protection in a Coordinated Manner." The Liaoning Television Station carried a 36-part program to publicize the environmental protection law. The literary and art programs produced by Anshan and Dalian cities won the third prize of the country for the literary and art works for environmental protection.

[Environment-Related Diplomacy] In 1991 the province received 13 visiting groups from the United States, Japan, the former Soviet Union, Italy, Canada, the UN Development Program, and the World Bank, and 57 foreign guests and sent observation and studying groups to Japan, the United States, the former Soviet Union, and Britain, thus promoting international exchange and cooperation.

[Environmental Protection Organizations] By 1991 the province had had 366 environmental protection organizations, of which 12 were scientific research institutes for environmental protection and 98 were monitoring stations. Staff members and workers of environmental protection departments totaled 5,096, of whom 3,002 were scientific and technical personnel, accounting for 58.9 percent of the total.

**Footnote:**

1) In the discharge of waste gas, waste water, and industrial residue for per 10,000 yuan of output value, the industrial output value was calculated in 1990 constant prices.

2) Because the division of the province's surface water had yet to be completed, this commune still used GB3838-83 as the standards for surface water quality.

**Tianjin Survey Reveals 'Dissatisfaction' on Environmental Issues**

40101023B Beijing CHINA DAILY (NATIONAL)  
in English 22 Jul 92 p 3

[Text] About 67.5 percent of people surveyed in Tianjin "are dissatisfied with China's current environmental situation."

And 52.8 percent of those surveyed worry about the future as the environment worsens, CHINA ENVIRONMENTAL NEWS quoted a recent environment awareness survey as saying.

The five-month-long survey, the first in Tianjin, was conducted by the Tianjin Branch of Beijing-based China Survey Service for the Tianjin Municipal Environmental Protection Bureau.

Some 1,000 urban and rural residents, selected at random, were interviewed.

Only 1.4 percent said they had never heard of China's environment protection laws.

About 91.8 percent thought each person or unit had a duty to protect the environment, while 8.2 percent said protecting the environment is the business of environment protection agencies and enterprises or institutions.

Answering an inquiry, "What will you do if a water pollution incident is found to take place?" 82.9 percent said they should inform environment protection agencies of the incident within 48 hours.

When asked "What are the basic causes of environment problems during a peaceful period?" 25.1 percent pointed to over-population, 14.5 percent to economic activities and technical means and 11.3 percent to poor human qualities as basic causes.

Half thought environmental problems emerge because of a combination of these three.

According to the survey, 91.4 percent thought mankind and the environment are interdependent.

About 77.6 percent knew the greenhouse effect is caused by temperature rises resulting from a buildup of carbon dioxide in the atmosphere.

**Government Taking Steps on Offshore Environmental Protection**

HK1308041092 Beijing CHINA DAILY in English  
12 Aug 92 p 1

[By staff reporter: "Protection Urged for Offshore Fisheries"]

[Text] The Government is moving to improve environmental protection in offshore areas in the wake of several serious accidents which caused heavy losses to aquatic products since June of this year, according to the State Oceanic Administration.

China's marine breeding industry has developed rapidly in recent years, thanks to on-going drives to tap ocean resources. Government action as well as progress in marine science and technology share the credit.

However, death and damage have been rendered to fish, shellfish, shrimp and other sea animals by pollution in

coastal waters, abnormal changes of hydrology and meteorology at sea, as well as poor rearing techniques and management.

A large number of clams in water farm fields died after continuous strong winds and heavy rains hit shallow waters off Qinzhou City in South China's Guangxi Zhuang Autonomous Region from June 18-20 and July 11-15.

Administration sources said that the accident killed clams totalling about 10 million kilograms, leading to more than 30 million yuan (\$5.5 million) in direct economic losses.

And many shrimp died in coastal waters off Leping County in Hebei Province after a large oil slick was found drifting onto shrimp-raising fields on June 29-30.

The State Oceanic Administration has urged local governments to give closer supervision to the ocean environment and work to prevent such accidents from recurring.

In a related development, the State Oceanic Administration will gradually shift its marine supervisory rights to local governments to meet the needs of marine development.

Xinhua News Agency reported recently that China will carry out reform experiments with the marine administration system in Hebei Province in North China. The report quoted Yan Hongmo, Director of the State Oceanic Administration.

The supervisory and administrative authority under centralized control will be transferred to local governments in order to improve systems for utilizing, managing and protecting the sea's resources.

As a pilot province in the reform, Hebei is the first to carry out the experiment. Since August 1, the Provincial Bureau of Oceanography has been entrusted by the State Oceanic Administration to start supervising and monitoring offshore oil platforms, ports, dumping grounds on the sea, various vessels, bathing beaches, and sea-product growing grounds to protect the oceanic resources and environment.

### **Government Launches Beijing Cleanup With View to 2000 Olympics**

*OW1508132792 Beijing XINHUA Domestic Service in Chinese 0602 GMT 15 Aug 92*

["The State Council's Environmental Protection Committee Has Made Decisions on Further Improving Beijing's Environment So As To Create a Favorable Environment To Bid for the 2000 Olympic Games"]

[Text] Beijing, 15 August (XINHUA)—The State Council's Environmental Protection Committee recently held its twenty-third meeting and adopted decisions to make

concerted efforts to further improve the capital's environment so as to create a favorable environment to bid for the 2000 Olympic games.

With the support of the party and the state, Beijing Municipality has applied to host the 2000 Olympic games. Improvement of Beijing's environment is a prerequisite for bidding for the Olympic games. Supported by various related departments at central level and guided by the municipal government, Beijing's environmental protection work has made relatively good progress; environmental conditions and Beijing's appearance have improved relatively considerably.

To further improve the capital's environment and to perform well in various environmental protection tasks related to bidding for the Olympic games, the decisions urged:

1. The creation of a clean and beautiful environment is not only a glorious obligation of the people in Beijing, it is also a common responsibility of various localities and departments across China. All ministries, commissions, and committees under the State Council—and various provinces, municipalities, and cities throughout the country—should give their full support to the Beijing Municipality in its bid for the 2000 Olympic games. They should also regard as important the task undertaken by Beijing's enterprises and industries in preventing and eliminating pollution. Furthermore, they should support these endeavors through funds and through implementing favorable policies, and should make other respective contributions to further improve Beijing's environment.

2. The Beijing Municipal Government should strengthen its leadership over environmental protection work; should take effective measures; should increase investments; should strengthen comprehensive protection and improvement over the environment; and should organize the people in Beijing to prevent air and vehicle-exhaust pollution. Meanwhile it should protect water supplies for drinking and for daily use, and should strive to implement the afforestation campaign. It should also strive to complete the municipal government's backbone construction projects—including the Gaobeidian Sewage Treatment Plant, the Shijingshan heating power pipes and cables project, and the airport road project. Moreover it should begin to comprehensively cleanse the moat in south Beijing, control the sewage system, and eradicate and prevent sources of industrial pollution so as to transform Beijing into a clean, beautiful, ecologically healthy and civilized city.

3. It is necessary to change the fuel mix and utilize a larger number of clean energy resources so as to improve air quality. The China National Petroleum and Natural Gas Corporation should consider supplying natural gas to Beijing on a priority basis so as to reduce air pollution emitted by coal-burning furnaces and ovens owned by urban residents, including public welfare enterprises and some industries. We propose that the State Planning

Commission should provide the necessary financial support. The Ministry of Foreign Economic Relations and Trade, the Ministry of Finance, the People's Bank of China, and the State Environmental Protection Bureau should jointly assist in arranging preferential loans in order to complete the gas supply projects at an early date. The State Planning Commission and the Ministry of Energy Resources should join with other related ministries and departments to formulate preferential policies to supply Beijing with low-sulfur, low-ash coal so as to reduce coal's smoke-related pollution.

4. It is necessary to resolutely take measures to control industrial pollution. Strictly in accordance with the requirements laid down by the general municipal plan, the Beijing Municipality and various ministries, commissions, and committees should make reasonable overall arrangements and should rigorously restrict the development of polluting industries in urban areas, especially along the upper reaches of Beijing's water sources or in upwind positions. We propose that related ministries, commissions, and committees—including the electric power industry, the metallurgical industry, the construction materials industry, the chemical industry, and the light industry—should regard Beijing as a principal center for preventing and eliminating industrial pollution. They should formulate plans, establish exemplary models, and apply overall organizational control and restriction on existing major pollution-causing industries so as to gradually reduce their volume of pollution from year to year. Related provinces, municipalities, and cities situated along the upper reaches of Beijing's water sources or in upwind positions from Beijing should also accelerate their elimination of polluting sources.

5. We should strive to implement the afforestation campaign and to improve the ecological environment in agricultural sectors. The Ministries of Forestry and Water Resources should study increasing investments and accelerating completion of protective shelterbelts in areas surrounding Beijing and Tianjin, and should considerably increase the afforested areas within Beijing Municipality. In addition to harnessing some minor river basins, we should strive to implement the plan for afforesting related areas in Hebei Province as well as hilly areas situated to the northeast of the Beijing Municipality so that a protective shelterbelt around Beijing will be developed.

6. We should protect the water supply for drinking and daily use. The Guanting and Miyun Reservoirs should be listed as key water sources under protection. Related provinces and cities situated along the upper reaches of Beijing's water sources—including Hebei, Shanxi, and Inner Mongolia—should realistically protect their water sources and safeguard the water purity in their respective rivers' upper reaches.

7. We should enhance scientific and technological progress for environmental protection. The State Science and Technology Commission should organize to tackle scientific and technological problems as well as to research, manufacture, and provide economical and effective techniques and products in order to reduce and eliminate pollution. The State Environmental Protection Bureau, the Ministry of Machine-Building and Electronics Industry, and the administrative departments in charge of vehicle-manufacturing enterprises should jointly strengthen their efforts in preventing, eliminating, supervising, and controlling vehicle-exhaust pollution. Vehicle-manufacturing enterprises should study and implement measures to reduce emission of vehicle-exhaust pollutants, and should ensure that their newly manufactured vehicles reach emission standards as required under environmental protection regulations.

### **Project To Restore North China's Largest Freshwater Lake Announced**

*OW2508032192 Beijing XINHUA in English  
0238 GMT 25 Aug 92*

[Text] Beijing, August 25 (XINHUA)—As an effort to restore the natural beauty of Baiyangdian lake, the state and local governments have decided to launch a 130 million yuan project to eliminate the pollution there within next three years, according to a *ECONOMIC DAILY* report.

Located in Baoding city, Hebei Province and covering an area of 366 sq [square] km, Baiyangdian lake is the largest freshwater lake on the north China plain. It has become a popular place for city people to escape from bustling city life.

Visitors once marveled at the natural beauty of the lake area, which was free of pollution, noise and crowds.

The lake, which is actually located on the center of a triangle formed by Beijing, Tianjin and Shijiazhuang, capital of Hebei Province, provides irrigation to the surrounding areas.

However, the annual influx of 1.5 million visitors has deposited a great deal of waste such as drink bottles, packaging hebei province, provides irrigation to the surrounding areas.

The lake is also a good place for anglers. There is an abundance of fish, shrimp, crab and shellfish. The lake's carp, shrimp, river crabs and soft-shelled turtles are famous far and wide.

But heavy industrial pollution is causing the death of over 1.5 million kg of fish in the lake, causing an economic loss of over 5 million yuan, according to the newspaper.

Two years ago, the central government approved a major project to divert water from the Yellow river to the lake to prevent the lake from drying up.

## REGIONAL AFFAIRS

**Greenpeace Warns France of Possible Nuclear Site Protests***BK0408094892 Hong Kong AFP in English 0746 GMT 4 Aug 92*

[Excerpt] Canberra, Aug 4 (AFP)—Greenpeace warned Tuesday that it would resume protesting at French nuclear sites in the South Pacific if France ends its moratorium on nuclear testing.

Weekend reports from the South Pacific atoll of Mururoa said there were indications France was set to resume testing with a limited series of underground explosions.

French President Francois Mitterrand announced a moratorium in April saying its duration depended on other nuclear powers suspending testing as well.

However, the United States has conducted four tests at its Nevada test site so far this year and China exploded one of its biggest nuclear devices in June.

Greenpeace Pacific campaigner Noni Keys said it would be premature and dishonest of the French government to give up on a world ban on testing so soon.

She said France should instead be pressuring other nations to stop nuclear testing.

Keys also criticised Australian Foreign Minister Gareth Evans for failing to increase pressure on the United States to join the ban.

"There has been ample opportunity for Australia to work with France to pressure the U.S. for a nuclear test ban, for example at the Rio Earth Summit, in the same way that we worked together to achieve world park status for Antarctica," she said in a statement.

To date Evans had shown little interest in stepping up the diplomatic initiative, she added. [passage omitted]

**South Pacific Forum Mission Declares Johnson Atoll Safe***BK1008103492 Hong Kong AFP in English 1009 GMT 10 Aug 92*

[Text] WELLINGTON, Aug 10 (AFP)—The U.S. chemical weapons disposal system on remote Johnston Atoll was Monday termed safe by a South Pacific Forum scientific mission.

The mission's report was hailed here by Disarmament Minister Doug Graham who said it "should alleviate concerns about environmental damage from the facility.

The Johnston Atoll Chemical Agents Disposal System (JACADS) upset the forum two years ago when biological and chemical weapons from U.S. bases in then West Germany were taken by sea to the atoll for destruction.

The atoll is 1,130 kilometres (700 miles) west-south-west of Honolulu, and to the north of the Marshall Islands and Kiribati.

The forum sent a mission comprising two scientists from Australia and one each from Papua New Guinea and New Zealand to JACADS last November.

In a report released by the Forum Secretariate in Suva, the mission said there was "some logic" for the facility to continue to destroy weapons beyond the 1995 date Washington had told the forum it would close down.

The report said there was no significant regional environmental threat from JACADS, but sea air might have some effect on the facility later.

But it said the facility would in 1995 represent a "functioning proven destruction facility" and added: "There will be a degree of pressure, founded on some logic, to continue the use of Johnston Island facility to carry out a further chemical weapons destruction programme."

There was, the report said, no technical reasons why destruction should not continue there.

It noted that the old Soviet Union's stockpile of biological and chemical weapons could end up at JACADS.

If the United States decided to extend JACADS then the forum should send another mission, the report said.

Graham, in his reaction, said the report had identified a "number of encouraging aspects" of the operation, including safety measures.

He also praised the United States for its cooperation with the forum mission.

## AUSTRALIA

**Antarctic Research Agreement Signed With Italy***BK1008102692 Hong Kong AFP in English 0632 GMT 10 Aug 92*

[Text] CANBERRA, Aug 10 (AFP) - Australian and Italian officials signed here Monday an agreement on scientific research in Antarctica.

Alessandro Vattani, director general of cultural affairs at the Italian foreign ministry, and Penny Wensley, first assistant secretary of the Australia foreign affairs department, signed the agreement.

It was the first scientific cooperation agreement Australia has entered into with another signatory of the Antarctic Treaty.

Australian officials said the agreement reflected the close cooperation between Italy and Australia in the lead-up to adoption of last year's Protocol on Environmental Protection under the Antarctic Treaty.



The agreement allows each country's researchers to share facilities and equipment, exchange technical information and engage in joint research programs.

Areas of joint research include glaciology, remote sensing, deep seismic investigation and marine and terrestrial biology.

### **Local Bodies To Be Responsible for Environment Program**

*BK1108060092 Melbourne Radio Australia in English  
0500 GMT 11 Aug 92*

[Text] Local governments in Australia will be handed much of the responsibility for implementing international and national programs to protect the environment.

Australia's ambassador on the environment, Sir Ninian Stephen, says care of the environment must begin at a community level. He was speaking in Canberra where he was chairing the inaugural meeting of an advisory group on a nationwide local government environment resources program.

The program will spend about \$1 million over the next three years to help local authorities carry out environmental management.

## **HONG KONG**

### **New Airport Plan Aims To Cut Costs, Protect Land**

*HK1808023392 Hong Kong SOUTH CHINA  
MORNING POST in English 18 Aug 92 p 1*

[By S.Y. Yue, Kathy Griffin, and Lana Wong]

[Excerpt] A new layout design for the Chek Lap Kok airport site unveiled by the Provisional Airport Authority [PAA] that will save taxpayers an estimated \$150 million [Hong Kong dollars] and huge tracts of Lantau from the bulldozer, has sparked concerns about environmental and safety problems.

Green groups have warned the design changes announced yesterday may have adverse effects on the environment, while a Legislative Councillor queried whether aviation safety would be compromised.

Under the new layout, announced by PAA chief executive Mr Richard Allen, about \$150 million could be saved from the total core projects cost of \$163.7 billion.

The announcement comes as China and Britain remain deadlocked over the financing of the Chek Lap Kok airport. There was no immediate response from Beijing to the plan.

The changes include constructing the passenger terminal building on existing land instead of reclaimed land where expensive piling would have been needed. In addition, about two kilometres of natural coastline on the east would be saved, with existing beaches remaining intact.

However, a small headland on Lantau Island, west of Sha Lo Wan, would be removed—producing improvements in terms of marine access to the villages opposite the airport for ferries and other vessels.

The new layout will also see new road and rail links shortened at significant savings and the southern runway which is expected to be in operation by 1997, moved westward. [passage omitted]

## **INDONESIA**

### **Forest Fires in Kalimantan Create 'National Disaster'**

*BK0408142892 Kuala Lumpur BERNAMA in English  
0632 GMT 4 Aug 92*

[Text] Kuala Lumpur, Aug 4 (OANA-BERNAMA)—Indonesia's frequent forest fires, especially in the Kalimantan region in Borneo, have depleted its 120 million hectares of forests and turned the environmental threat into a national disaster, according to a report released here.

Between 1982 and 1983, the fires in East Kalimantan alone turned 3.6 million hectares of forests to ash, the Jakarta Municipal Fire Service said in a country report released at the 17th International Fire Chiefs Association of Asia General Conference here.

"Almost 30,000 hectares were razed last year and more than 1,200 hectares the previous year", the report said.

It added that opening of forest land for transmigration settlement and farming besides felling for industrial use had all contributed to the overall reduction of forests in Indonesia.

The fires were mainly caused by human carelessness, arson, cigarette butts, and burning coal resources.

The report said burning of coal resources—some still prevailing after the extensive 1982/83 East Kalimantan forest fire covering 3.6 million hectares—posed a serious danger to both human life and the ecosystem.

This, coupled with East Kalimantan's dense coal potential, spread throughout the region, it added.

**Timber Company Poaching Threatens Irian Jaya Forest**

*BK1308085792 Jakarta Radio Republik Indonesia Network in Indonesian 0600 GMT 13 Aug 92*

[Text] About 280,000 hectares of forest in seven subdistricts in Sorong district, Irian Jaya, are now facing destruction due to uncontrolled poaching by several timber concessionaires. The irresponsible actions by the timber companies have not only undermined the public, but also the government and the nation, because the companies do not have a replanting program to implement after cutting down the trees. Speaking in Sorong, (Fedu Kalangi), chairman of Aborigine People Association, said there are now about 14 companies involving in illegal poaching in Sorong district and (Bintumi) subdistrict in Manokwari district.

**JAPAN****AIST FY92 Industrial Pollution R&D Outlined**

*92WN0564A Tokyo JITA NEWS in Japanese May 92 pp 4-8*

[Text] The Agency of Industrial Science and Technology (AIST) has, since the late 1950's, conducted research on industrial anti-pollution technology in an effort to contribute toward the prevention of industrial pollution, and has sought to widely implement the advances it has made in this field.

Of the 40 research studies undertaken in FY91, 12 were concluded in 1991, so the 40 studies to be carried out in FY92 will include 12 new ones. The names of the research studies to be carried out in FY92 are listed in Table 1, together with the amount of funding budgeted for each. The total research budget is ¥1,030.7 million.

**Table 1. Table of AIST's Testing and Research Projects for Pollution Prevention in FY92 (Units: ¥1,000)**

Project number	Descriptive name of the research project	Research organization	Project term	FY91 budget	FY92 budget
1	Research on catalytic combustion technology for reducing NO <sub>x</sub> from minor sources	ICR Hokkaishi NRET	1989-92	51,057	37,974
2	Research on treatment of gaseous toxic chemicals	ICR	1991-94	14,274	15,092
3	Research on functional composite catalytic systems for reduction of diesel NO <sub>x</sub>	NRET ICR GIRI, Osaka	1991-95	31,157	33,910
4	Research on techniques to simultaneously suppress N <sub>2</sub> O and NO <sub>x</sub> emissions from coal burning facilities	NRET Hokkaishi	1991-94	38,576	38,116
5	Basic research on removal of pollutants from air in tunnels and other confined spaces	MEL	1991-95	24,001	22,858
6	Research on cleaning diesel engine exhaust by intermediate and late combustion activation	MEL	1991-97	0	17,703
7	Nitrogen, sulfur removal by electrical discharge	ETL	1992-96	0	20,187
8	Research on high-performance gas sensors for environmental monitoring	IPRI	1992-96	0	14,944
9	Research on highly selective separation technology to prevent emission of toxic organic compounds	NRET	1992-96	0	17,339
10	Research on techniques for inhibiting generation of toxic chemicals in electrical dust-collection units	NRET	1992-94	0	23,390
11	Research on highly efficient techniques for treatment of toxic chemicals by ecological control of activated sludge	NRET	1988-92	17,450	14,943
12	Research on sophisticated techniques for treating toxic waste water from advanced technological industries	ICR	1990-93	20,722	22,477
13	Research on catalytic oxidation and decomposition of degradation-resistant toxic organic chemicals	NRET GIRI, Osaka	1990-94	43,016	43,870

**Table 1. Table of AIST's Testing and Research Projects for Pollution Prevention in FY92 (Units: ¥ 1,000) (Continued)**

Project number	Descriptive name of the research project	Research organization	Project term	FY91 budget	FY92 budget
14	Research on recycled paper factory waste water treatment technology	GIRI, Shikoku	1990-92	20,624	16,692
15	Research to improve organic waste water treatment	ICR	1991-95	14,327	15,635
16	Research on technology for identifying optimum building sites based on elucidation of long-term transition processes in shallow sea environments	NRET GSO	1988-92	63,424	45,461
17	Research on purification of mobile organic mud in closed sea areas	GIRI, Osaka	1988-92	27,261	27,841
18	Research on technology for proper environmental controls and broad environmental evaluation associated with topographical changes in Seto Inland Sea	GIRI, Osaka	1990-94	77,564	89,267
19	Research on shoreline structures and evaluation of purification mechanisms	NRET	1990-93	16,622	19,980
20	Research on organic tin replacement antibody adsorbing polymers	TRI	1991-94	13,986	16,096
21	Research on nitrogen circulation process in inland water deposits	NRET	1991-94	15,769	19,760
22	Research on degradability of toxic chemicals in shore deposit environments	NRET	1992-96	0	23,825
23	Research on purification techniques for polluted lake and swamp bottoms	GSO	1990-94	19,302	17,184
24	Research on treatment of toxic organic compounds using chemical environmental methods	Hokkaishi	1991-95	12,118	14,685
25	Research on combating ground-water pollution from toxic organic compounds	NRET TRI GIRI, Osaka	1992-95	0	35,102
26	Research on technology for treating toxic organic compound mixed industrial wastes	NRET	1988-92	21,790	17,173
27	Research on technology for non-polluting treatment and utilization of asbestos wastes	NRET	1990-93	20,395	21,952
28	Research on treatment of advanced industry wastes	NRET Hokkaishi	1990-93	31,875	29,172
29	Research on development of microbe treatment technology for rubber and plastic wastes	FRI ICR GIRI, Osaka	1991-95	30,217	32,800
30	Research to develop techniques for removal of chlorine from plastic waste material	Hokkaishi	1992-95	0	17,195
31	Research on shock-related low-frequency sound generation, propagation mechanisms and measurement, evaluation	NRET	1990-93	25,161	25,055
32	Research on tire noise reduction techniques	MEL	1992-94	0	17,222
33	Research on psychological, physiological measurement and evaluation of fluctuating odors	IPRI ETL	1990-93	40,211	40,012

**Table 1. Table of AIST's Testing and Research Projects for Pollution Prevention in FY92 (Units: ¥ 1,000) (Continued)**

Project number	Descriptive name of the research project	Research organization	Project term	FY91 budget	FY92 budget
34	Research on forecasting changes in formation of floating life forms in coastal regions and automatic measurement techniques therefor	ETL NRET	1988-92	32,288	25,698
35	Research on highly sensitive configuration analysis technology for toxic substances associated with waste products using hybrid techniques	NRET	1992-97	0	9,983
36	Research on environment-related indexing, estimating techniques for advance evaluation of environmental effects of chemical substances	ICR	1990-93	16,732	16,299
37	Research on practical implementation of diesel exhaust particle removal methods using filter traps and catalytic oxidation systems	MEL	1990-93	14,811	19,121
38	Research on development of super-system for phosphorus removal, recovery	FRI	1992-94	0	16,461
39	Research on effects of stratification on inland water flows, water quality	GIRI, Osaka	1992-95	0	16,863
40	Research to develop forecasting and monitoring techniques on spread of environmental pollutants from advanced technological industries	NRET GSO	1988-92	75,614	61,364
	Studies ending last fiscal year (12 studies)			204,496	
	Total (40 studies)			1,034,840	1,030,701

ICR = Institute for Chemical Research; GIRI = Government Industrial Research Institute; NRET = Natural Resources and Environmental Technology General Research Institute; MEL = Mechanical Engineering Laboratory; ETL = Electrotechnical Laboratory; IPRI = Industrial Products Research Institute; GSO = Geological Survey Office; TRI = Textile Research Institute; FRI = Fermentation Research Institute; Hokkaido = Hokkaido Industrial Development and Testing Laboratory

The chart in Figure 1 traces the trends in special pollution research studies (number and budgeted funding) since 1972, by research field.

From the chart we can see that there has been a gradual declining trend in overall number of study themes and budgeted amounts since a peak in 1979. For FY92, the study themes increased in the atmospheric, water-quality, and waste-disposal fields, but decreased by the same amount in the measurement field, so that overall there was no net change in the number of study themes.

Some new items in the 1994 list are particularly noteworthy: technology for preventing ground-water contamination by toxic organic compounds, research on highly selective separation, high-sensitivity form analysis, and degradability in piled-up environments, technology for cleaning diesel engine exhaust and for removing sulfur and nitrogen by electrical discharge, techniques for reducing tire noise, and research on the removal of chlorine from plastic wastes.

We now give a brief synopsis of each of the 12 research themes that will be newly undertaken in FY92.

### **1. Research on Cleaning Diesel Engine Exhaust by Intermediate and Late Combustion Activation**

**Organization Responsible: Mechanical Engineering Laboratory**

The problem of atmospheric pollution resulting from the NO<sub>x</sub> emitted from diesel engines continues to be a serious one. But it will take more than existing technology to reduce the toxic emissions from diesel engines. It will take nothing short of developing new technology based on new combustion concepts.

In this study, a combustion chamber is used which has a secondary chamber that moves up and down together with the piston. This secondary chamber suppresses NO<sub>x</sub> emission in the early stage of combustion, and also creating disturbances at the intermediate and late combustion sites so as to reduce the amount of particle material. A new combustion control method will thus be presented, together with the guidelines necessary for practical implementation.

### **2. Research on Tire Noise Reduction Techniques**

**Organization Responsible: Mechanical Engineering Laboratory**

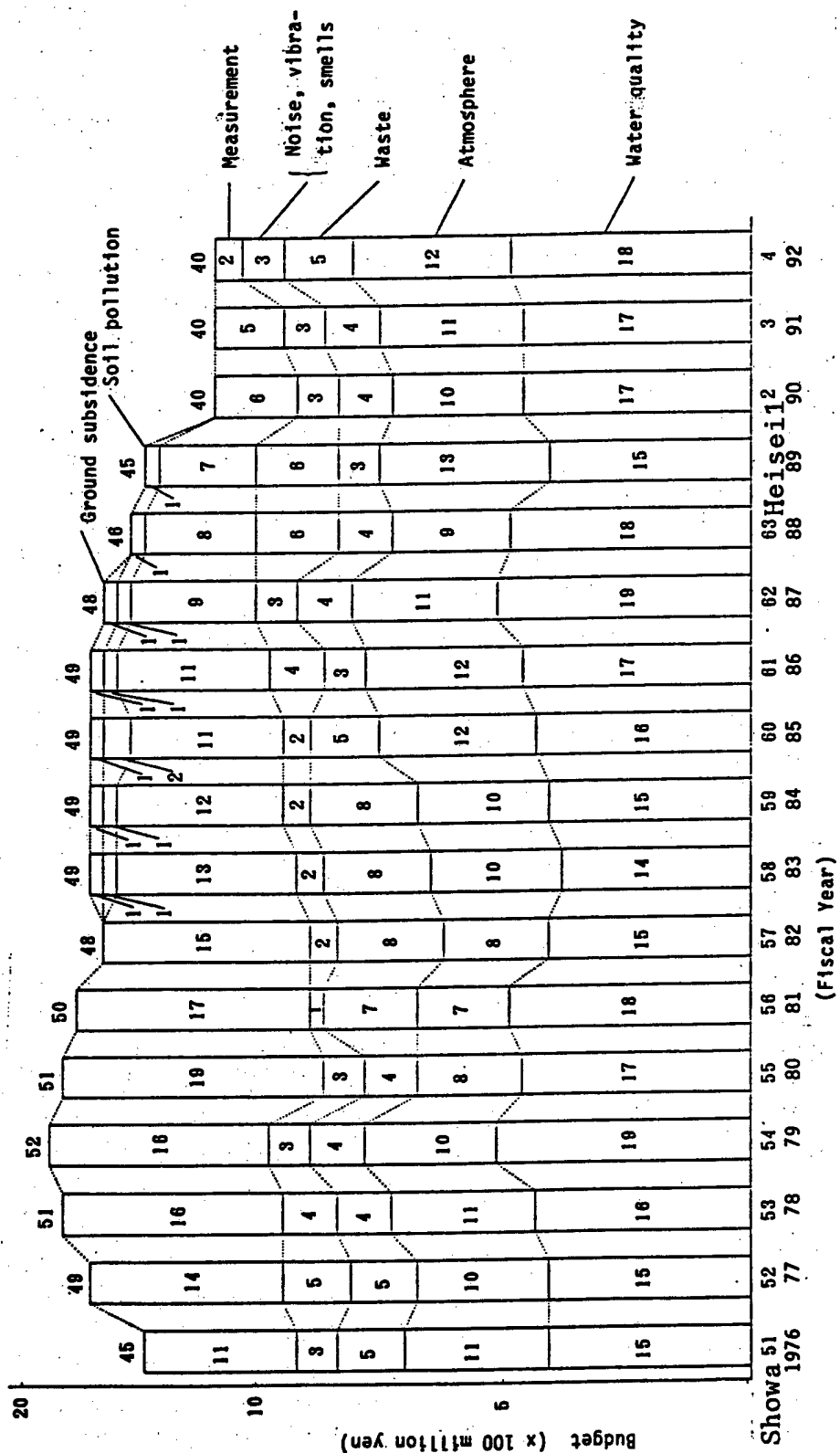


Figure 1. Trends in AIST's Special Pollution Research Studies (Number and Budgeted Funding) by Research Field

Despite the many different sound-insulating measures that have been taken in the past, road traffic noise is getting worse every year as the volume of automobile traffic increases. Tire noise, along with engine and drive-train noise during acceleration, constitutes a serious problem.

In this study, noise tests are performed, using real vehicles and tire testing machines, in an effort to elucidate the relationships between structure and noise-generation mechanisms in both road surface and tire. The aim is to provide design guidelines for tire structures which will prove effective in reducing tire noise.

### **3. Research on Development of Super-System for Phosphorus Removal, Recovery**

**Organizations Responsible:** Fermentation Research Institute, Ministry of Construction Public Works Research Institute

Phosphorous removal systems which make use of the activated sludge process and microbes involve mixed systems of microbes made up of live biomasses from all kinds of microbes. For this reason it is very difficult to control the organism phases and much labor is consumed in maintenance and control to elicit the desired levels of performance. And, since the removed phosphorus is contained in the sludge, recovery is difficult, and the system cannot be used with inorganic phosphorus-containing waste water which does not contain organic matter.

In this study, a new phosphorous adsorption-desorption agent was developed which uses dormant biomasses of highly concentrated polyphosphate-storing bacteria and is easier to maintain and control. This technology can remove and recover phosphorus from inorganic, low-concentration phosphorus-containing waste water.

### **4. Research on Sulfur, Nitrogen, Sulfur Removal by Electrical Discharge**

**Organization Responsible:** Electrotechnical Laboratory

The destruction of ecosystems caused by acid rain has become a global problem which calls for next-generation technology for desulfurization and denitrogenation. One possible method is the electron beam method, developed in Japan. This method entails the use of radiation and sophisticated equipment, however, making its use problematic.

The objectives of this study are to elucidate element reaction processes for and important factors in desulfurization and denitrogenation based on simpler direct-current pulse-corona discharges and high-frequency discharges, to experimentally design working equipment, and to evaluate the engineering feasibility of these concepts.

### **5. Research on High-Performance Gas Sensors for Environmental Monitoring**

**Organization Responsible:** Industrial Products Research Institute

The nitrous oxidation products and other acidic gases emitted from automobile and other combustion engines produce environmental pollutants which now constitute a great social problem. Measuring the concentration of these pollutants presently requires large-scale, expensive equipment. It has been difficult to monitor local variation and changes over time.

This study is aimed at developing small gas-sensor units which can measure concentrations of nitrous oxide products and other acidic gases with both high sensitivity and high selectivity.

### **6. Research on Combating Ground-Water Pollution From Toxic Organic Compounds**

**Organizations Responsible:** Natural Resources and Environmental Technology General Research Institute, Research Institute for Polymers and Textiles, Government Industrial Research Institute, Osaka

Ground-water pollution caused by organic chlorine-based solvents and agricultural chemicals, and exacerbated by sewage and golf-course drainage water in many localities, is a serious problem calling for urgent clean-up measures. Once subterranean water has been contaminated, it is very difficult to recover. This study is trying to develop an efficient treatment system (that does not involve secondary contamination) by employing supercritical fluid technology to the treatment of waste water which cannot be treated well with highly functional adsorbent agents in which activated carbon fibers are used, direct treatment of underground water with permeable separation films, the recycling of used treatment agents, or adsorption methods.

### **7. Research on Highly Selective Separation Technology To Prevent Emission of Toxic Organic Compounds**

**Organization Responsible:** Natural Resources and Environmental Technology General Research Institute

In recent years, organic halogen compounds and other synthetic organic compounds have created serious environmental problems which have led the government and local authorities to require businesses using such materials to take severe control measures. In separating and recovering such organic substances using conventional technology, complex treatment processes are required due to the presence of steam and other materials in the emission products which inhibit the separation of toxic substances. It is difficult to simplify these facilities and the costs of running them are disadvantageous. This study is aimed at developing highly selective and economical methods for separating and removing toxic organic compounds emitted from large and small scale sources. These methods employ clathrate compounds

like cyclodextrine as well as inorganic adsorbents like chemically modified zeolite.

**8. Research on Highly Sensitive Configuration Analysis Technology for Toxic Substances Associated With Waste Products Using Hybrid Techniques**

**Organization Responsible:** Natural Resources and Environmental Technology General Research Institute

In recent years there has been an increase both in the kinds and volumes of toxic chemical substances introduced into the environment as a result of industrial wastes. This calls for intensified safety precautions at toxic waste control and treatment facilities, both in Japan and abroad. Not only are such substances transported in a variety of chemical configurations, but there is a danger that these chemical configurations will change at the treatment sites due to such processes as precipitation, decomposition, or methylation. The toxicity and environmental behavior of such chemical substances differs greatly depending on the chemical configuration. Hence we need to be able to analyze each chemical substance and determine its configuration very exactly.

Almost all conventional analysis techniques do no more than measure total quantities. When they do extend to configuration analysis either the sensitivity is inadequate or the analysis is limited to volatile substances.

In this study, therefore, the aim is to develop a hybrid method that organically combines separation technology and analysis technology, resulting in fast, highly sensitive configuration-analysis techniques for such toxic substances as heavy metals and metalloid elements. The goal is to use these techniques to elucidate the behavior of toxic substances at waste treatment sites and thereby to more effectively and safely control such toxic waste materials.

**9. Research on Degradability of Toxic Chemicals in Shore Deposit Environments**

**Organization Responsible:** Natural Resources and Environmental Technology General Research Institute

Materials deposited in shore areas accumulate high concentrations of toxic chemicals which flow into the sea. Not only are these the marine areas subject to the most advanced pollution, but, once the deposited material stores up toxic chemicals, it becomes a source of pollution which has long-term effects. However, different organic reactions (nitric acid reduction, sulfuric acid reduction, and methane generation) occur in the deposited material in complex fashion, and very little is known about how the ways in which these processes change or decompose the toxic chemicals.

This study is designed to investigate the mechanisms by which anaerobic microbe groups change or break down organic chlorides and organic compounds of tin, and perfect procedures for evaluating each complex reaction which takes place in the deposited material.

**10. Research on Techniques for Inhibiting Generation of Toxic Chemicals in Electrical Dust-Collection Units**

**Organization Responsible:** Natural Resources and Environmental Technology General Research Institute

The generation of toxic chemical substances at incineration facilities has become a serious social problem. Electrical dust-collection units have been identified as one source of such toxic material.

This study seeks to elucidate the mechanism by which toxic chemicals are generated in connection with electrical dust collection, and to develop efficient electrical dust-collection technology which will dramatically reduce such generation.

**11. Research To Develop Techniques for Removal of Chlorine From Plastic Waste Material**

**Organization Responsible:** Hokkaido Industrial Development and Testing Laboratory (Hokkaishi)

Almost all plastic wastes are either sent to landfill sites or incinerated. Recently, as landfill sites have become more difficult to acquire, the polyvinyl chlorides which unavoidably get mixed into waste plastic are generating toxic chlorine gas when incinerated, causing damage to incinerators and contributing to atmospheric pollution.

At the Government Industrial Research Institute in Hokkaido, technology has already been developed for efficiently turning waste plastic into oil, but the quality of the product is being significantly reduced by the hydrogen chloride resulting from the admixture of PVC. This study has focused on such thermal properties of plastics as melting and decomposition behavior under heating, and is seeking to develop the needed methods and apparatus for chlorine removal using the said properties. Hence the goal is non-polluting recycling of natural resources.

**12. Research on Effects of Stratification on Inland Water Flows, Water Quality**

**Organizations Responsible:** Government Industrial Research Institute, Chugoku; Hydrographic Department, Maritime Safety Agency, Ministry of Transport

In the sheltered sea areas in the Seto Inland Sea and elsewhere, oxygen-deficient water concentrations continue to be produced in conjunction with the so-called "nutritional enhancement" (*fuetyoka*) phenomenon, and these are having a large impact on ecosystems. Measures to prevent this are urgently needed.

In this study, measurements are being made in the Seto Inland Sea on stratification intensity, vertical mixing forces, and bottom circulation currents. This is being done to shed light on oxygen transport behavior resulting from stratification and seawater mixing forces, and on

bottom-level seawater dynamics. Based on these findings, oxygen transport models will be devised, the environmental effectiveness of measures to prevent oxygen-deficient water concentrations will be evaluated, and appropriate measures for improving the water quality in inland waters will be developed.

### **Government To Form Asia-Pacific Environmental Network**

*OW0408122892 Tokyo MAINICHI SHIMBUN  
in Japanese 4 Aug 92 Morning Edition p 1*

[Text] On 3 August, the Science and Technology Agency [STA] compiled a plan to promote international cooperation in establishing a network in the Asia-Pacific region to observe the global environment via satellite. At the UN Conference on Environment and Development (Earth Summit) held in June, a resolution calling for enhancing observations on the global environment was adopted. To respond to this resolution, the plan was worked out as part of Japanese contributions to the international community. The plan is expected to be adopted at a meeting of the Space Activities Commission scheduled for 7 August.

The STA and the National Space Development Agency [NASDA] have so far provided other Asian countries with data obtained from the "Himawari-4," a geostationary operational environmental satellite, and the "Momo-1," an ocean surveillance satellite; however, because of insufficient skills in data analysis, Asian nations receiving the data have hardly made good use of it. Moreover, more voices are calling for preventing environmental pollution by developing countries and for conducting observations over wide areas.

In the first stage of the plan conducted from 1993 to 1995, Japan will place priority on providing assistance to Southeast Asian countries.

Japan will assist these nations in developing skills in analyzing observation data, which are useful to conduct surveys on vegetation changes in forests and farm products and on crops, and to take preventive measures against natural disasters, such as forest fires and floods. Japan will study the possibility of sending technicians to these countries as well as of establishing a training system.

With the NASDA's earth observation center (in Hatoyama-machi, Saitama Prefecture) as a base, Japan will improve a network for observation by obtaining various data on weather patterns and the ocean from Asian countries and using them as data base. Moreover, it will enhance observations by holding a regular conference on research works.

The data to be collected will include those sent from the "Fuyo-1," an earth resources satellite, and from an earth observatory satellite, which is scheduled to be launched in 1995.

Besides Southeast Asian nations such as Thailand and the Philippines, China, South Korea, and Mongolia have shown interest in using satellite observation technology. The STA will propose its international cooperation plan at the Asia-Pacific International Conference for International Space Year, which will be held in Tokyo in November, and seek other nations' cooperation.

### **Agency To Study Feasibility of Chinese Coal Complex**

*OW0508075492 Tokyo NIHON KEIZAI SHIMBUN  
in Japanese 5 Aug 92 Morning Edition*

[Received via Nikkei Telecom data base]

[Text] It was disclosed that the PRC has asked the Japan International Cooperation Agency (JICA) to conduct a feasibility study (FS) in relation with the PRC's decision to construct the world's first comprehensive coal chemical complex. Taking advantage of the fact that it is a coal-producing country, the PRC plans to use coal in place of oil as its major energy source. The construction of the chemical complex will be the major project in its Ninth Five-Year Plan (1996-2000).

The complex has been named the "Shenmutan Complex for the Comprehensive and Efficient Use of Coal." The China International Engineering Consulting Corporation, a subordinate organization under the PRC State Planning Commission, and Japan's Engineering Advancement Association worked together on technical research. After the feasibility study is completed, the PRC plans to open construction to international bidding.

Baotou, in the Inner Mongolian Autonomous Region, located 800 km west of Beijing, has been selected as the construction site. The chemical complex will be utilizing coal excavated from Shenfu's Dong Sheng coalfields, which has the richest deposits in the entire nation, as it stretches from the Inner Mongolian Autonomous Region to Shaanxi Province.

According to calculations by the Engineering Advancement Association, the chemical complex will use 1.7 million tons of coal annually to produce 500,000 cubic meters of city gas per day (equal to the quantity used by 50,000 ordinary homes), and 520,000 tons of urea, 180,000 tons of methanol, and 200,000 tons of acetic acid annually.

Burning coal produces sulfur oxide, which causes acid rain; however, environmental pollution can be prevented by gasifying coal at the coal chemical complex.

### **Environmental Impact Assessment for New Products Considered**

*OW1208040092 Tokyo KYODO in English 0314 GMT  
12 Aug 92*

[Text] Tokyo, Aug. (KYODO)—The Environment Agency is considering the development next year of a



method of assessing the environmental impact of new products, agency officials said Wednesday.

The method is intended as a means of heading off environmental damage likely to be caused in the process of producing and using goods, and to encourage manufacturers to make their products "easy on the environment," the officials said.

As an example, under the plan the agency would assess environmental impact of certain production technologies prior to actual use.

With such pre-assessment, environmental damage like water pollution caused by chemicals used for cleaning computer chips, can largely be prevented, they said.

The agency also plans to develop a method to calculate the total amount of carbon dioxide which is released by a product during the lifetime from its development to its disposal or recycling.

Once the methods are established, the agency plans to set up a qualification system through which all new products are required to pass, the officials added.

Currently, many countries are thinking of making similar moves due to growing concern over environmental damage caused by human economic activity, they said.

The concept of product environmental impact assessment was included in the "Agenda 21" action plan adopted in the Earth Summit last June in Rio de Janeiro.

### **Councils Unveil Basic Environment Law Proposals**

*OW2008123892 Tokyo KYODO in English 0909 GMT 20 Aug 92*

[Text] Tokyo, Aug. 20 (KYODO)—The Environment Agency foreshadowed Thursday the possible introduction of environmental taxes and ecological impact assessments of products in a bill due for Diet deliberations in October.

The proposals are contained in a report from the Central Council for Environmental Pollution Control and the Nature Conservation Council, both bodies within the agency. The councils have been deliberating the contents of a draft basic environment law.

Their report stresses the importance of economic measures such as taxes and notes increasing moves for enshrining environmental assessments in legislation. It also introduces the concept of product assessments.

A full report from the councils is scheduled for the end of September.

The agency will then base its drafting of the bill on the report in consultation with other agencies and ministries in time to send the recommendations as a package to an extraordinary session of the Diet in October.

In a section on economic measures, the report specifies environmental resources should be accorded an appropriate value and even when treated economically, should be used and allocated in an efficient and environmentally friendly way.

In line with a recommendation of the council of the Organization for Economic Cooperation and Development in January 1991, the report favors introduction of charges or taxes on environmentally damaging products or activities, as well as environmental assistance and deposits on returnable containers.

The report says the environment should be taken into account when framing policies affecting the nation and the private sector, and in the drafting of projects by businesses, or at the product design stage.

While avoiding reference to legislative technicalities, it introduces the concept of prior evaluation of the energy used and the impact on the environment in every stage from production to disposal of a product.

On the international front, the report backs recommendations of the Ministry of International Trade and Industry and the Federation of Economic Organizations when suggesting corporations operating overseas voluntarily exercise their own form of environmental concern.

It says the bill should aim to create a society with an economic system which ensures the preservation of the environment in a sustainable way for future generations without sacrificing living standards.

If Japan is to achieve its environmental policy aims, the nation will need to provide incentives to gain the cooperation of individuals, the report says.

It notes Japan's economic activities have a "major impact" on the environments of other countries.

Japan's overseas development assistance should take full account of environmental issues and the nations should boost its capacity to give more financial, technical, and personnel assistance for ecological protection in developing countries.

The bill is designed to cover areas not already included in the basic law on pollution control and the basic law for natural environment conservation.

It would, therefore, contain reference to the sort of pollution which derives from mass consumption and disposal of waste in big cities, or can lead to global warming or damage to the ozone layer.

Prime Minister Kiichi Miyazawa served notice of the legislation at the eminent persons conference on the environment and development in Tokyo in April.

**Environment Agency To Begin Study on PCB Disposal Methods**

*OW2508150292 Tokyo NHK General Television Network in Japanese 1000 GMT 25 Aug 92*

[Text] PCB—polychlorinated biphenyl—is a substance which people do not know how to dispose of even though its production was banned 20 years ago. But now, because of possible pollution occurring from the substance, the Environment Agency has decided to begin studying safe ways to dispose of the substance.

PCB was formally used in large volumes in such electric devices as high-voltage transformers, but following many incidents of people having been hurt from PCB-contaminated oil—called the Kanemi Oil incident—its strong toxicity and carcinogenicity became a problem, and its production was stopped in 1972.

At that time, owners of some 370,000 electric devices containing PCB were instructed to store them away safely. Initially, the plan was to incinerate the substance. But soon concern was expressed about the possibility of dioxin being released in the course of incineration, and consequently the substance has been left in storage for the past 20 years since the owners did not know how to dispose of it.

Recently, several surveys conducted in Tokyo and Gifu Prefecture found that about 20 percent of the electrical devices containing PCB were missing from their storage places, causing fear that misplaced devices will cause pollution. The survey results urged the Environment Agency to promptly dispose of the PCB in order to prevent an accident.

In fiscal 1993, the agency plans to study how PCB is incinerated in Europe and the United States, and in 1994 the agency will begin tests to determine the safest method of the disposal.

**Agency To Extend Aid on Overseas Biodiversity Projects**

*OW2508033192 Tokyo KYODO in English 0307 GMT 25 Aug 92*

[Text] Tokyo, Aug. 25 (KYODO)—The Environment Agency said Tuesday it plans to provide financial assistance to several nations for joint pilot projects on environmental protection for selected areas next fiscal year.

The five-year projects will be designed to construct models of sustainable use for four types of environments, taking into account the protection and utilization of those areas' specific resources.

The agency plans to request 31 million yen in the first year for the projects.

Among the projects' aims will be the protection and survival of numerous tropical rain forest plants and

animal species, such as the Sumatra rhinoceros, the orangutan and the preservation of wetlands used by migratory birds.

The agency will also provide assistance to projects to preserve endangered species in mountain and high area environments, such as the Himalayas, as well as in coral reefs in Southeast Asia and the southern Pacific Ocean.

Sources in the agency said two examples from each of the four types of environments will initially be chosen for the projects in cooperation with local authorities.

The agency will apply experience and data collation techniques used in monitoring the areas' flora and fauna.

It will also attempt to develop strategies for environmental preservation that do not place a burden on developing countries.

The sources said the biodiversity convention, which Japan signed at the Earth Summit in Rio de Janeiro in June, stressed the importance of environmental protection and that the projects are an attempt by Japan to make good those intentions.

**Advisory Panels To Make Global Environment Proposal by Year-End**

*OW2508103192 Tokyo KYODO in English 1017 GMT 25 Aug 92*

[Text] Tokyo, Aug. 25 (KYODO)—Three advisory panels to the trade minister will continue studying specific ways to protect the global environment in order to make a proposal by the end of this year, Ministry of International Trade and Industry officials said Tuesday [25 August].

The Industrial Structure Council, the advisory committee for energy, and the Industrial Technology Council agreed at their second joint meeting it is essential to work out comprehensive measures in various areas, the officials said.

The panels also agreed that although it is important to pursue energy-saving measures and development of alternative energy sources for the time being, they are not the only issues, they said.

Some members called for coordination among government ministries and agencies, referring to studies by the Environment Agency.

The next joint meeting October 27 will examine results of intensive studies under way by a subcommittee, the officials said.

## SOUTH KOREA

### Waste Imports To Be Subject to Government Approval

SK0108060892 Seoul THE KOREA TIMES in English  
1 Aug 92 p 3

[Text] The import and export of harmful and recyclable waste must be preceded by authorization from the Trade-Industry and Environment Ministries in accordance with the Basel Convention.

According to the Environment Ministry yesterday, those engaging in the import and export of such materials will have to comply with the regulations before the end of the year.

The Basel Convention was initiated and established primarily by industrializing and Third World countries in 1989 to halt inbound shipments of harmful waste from advanced countries.

Under the new regulations, importers of waste materials must obtain approval from the Trade-Industry Ministry who in turn will have to consult with the Environment Ministry.

The Trade-Industry Ministry will not be able to issue any authorization without the express consent of the Environment Ministry, ministry officials explained.

"There have been wide-spread practices of companies in advanced countries exporting harmful materials to countries like those in Africa to avoid conforming to strict internal laws on environmental protection," one official said.

With the Basel Convention going into force May 5, the Environment Ministry has been working briskly to introduce regulations to the effect that its opinions are reflected in the approval process.

The regulations on the import and export of related used materials will affect 47 items, including soiled material from medical facilities, the officials elaborated.

The new set of rules will provide some difficulties for importers of used steel and paper, which are widely recycled here since exporters must obtain approval from the two ministries.

On the other hand, the officials said, exporters of PCB and other chemical plastics now have a legal basis for shipping the used materials to foreign countries.

There are currently 23 signatories to the convention. The convention went into effect three months after Australia, the 20th signatory, joined the international agreement Feb. 25.

Although most advanced countries, including the United States, Japan, Germany and Britain, are holding out, they are expected to join the convention before the end of the year since it has already gone into effect.

### Stricter Guidelines for Environmental Protection Firms

SK1808032292 Seoul THE KOREA TIMES in English  
18 Aug 92 p 3

[Text] Basic registration requirements have been strengthened for companies specializing in the prevention of pollution to cope effectively with the influx of foreign competition in the domestic market.

According to the Environment Ministry yesterday, the paid-in capital of these firms has been increased 10-fold from 20 million won to 200 million won retrospectively from August 8.

Ministry officials said the step was imminent since most of the industrial firms engaging in the production of pollution-preventing facilities are relatively fragile.

"While there are large companies participating in the field as well, a majority of them have paid-in capital of less than 100 million won, thus making it difficult for them to compete effectively and develop related technologies," one official explained.

On top of the increase in the paid-in capital, it is now mandatory for the companies to be equipped with a minimum of eight types of manufacturing instruments including welding machines.

The ministry officials added that the firms must also have under employment a grade 1 technician in environmental engineering with experience of at least seven years, two years more than the previous five years.

Administrative actions on those violating related regulations have also been increased to two years from the previous one year, thus making it necessary for them to work under greater discipline.

One official said, "The recent United Nations Conference on Environment and Development (UNCED) opened the way for foreign companies to penetrate the local market and it is high time that the qualifications of domestic firms are strengthened if they are to survive."

At present, there are a total of 631 companies specializing in the field and project contracts for last year reached 595.6 billion won, indicating that it is an up-and-coming industry.

Owing to the market becoming more and more lucrative, reaching an estimated 1 trillion won by 1995, it is necessary for the government to implement stricter guidelines for participation, the official elaborated.

## MALAYSIA

**Agreement on Pergau Dam Project Re-Signed**

*BK0408075492 Kuala Lumpur Voice of Malaysia  
in English 0600 GMT 4 Aug 92*

[Text] The agreement on the 1.3 billion ringgit Pergau hydroelectric dam project was re-signed today between an electricity supplier, Tenaga Nasional Berhad [Company Limited], and the Kelantan State Government. Tenaga Nasional said in a statement that the signing will be held in Kuala Lumpur.

Construction of the dam was disrupted when the PAS [Pan-Malaysian Islamic Party]-led Kelantan State Government blockaded access to the project site on July 4th to force its demand for 90 million ringgit in compensation from the Federal Government.

Work resumed recently after a compromise reached between the chief minister and Tenaga Nasional Chairman Tan Sri Ani Arope.

## VIETNAM

**Council of Ministers Decision Promotes Forest Development Investment**

*BK0608135292 Hanoi Voice of Vietnam Network  
in Vietnamese 1100 GMT 29 Jul 92*

[Text] On 22 July, the Council of Ministers chairman issued a decision on incentive measures to promote investment in forest development. Under this decision, it is the state policy to encourage all economic sectors to use their potentialities in labor force, land, materials, and capital to support forest conservation and development. Based on land development funding and planning, authorized state agencies will allot land to people for afforestation and will also support them with budget allocations or credit loans from local financial institutions or from foreign joint investment capital.

The decision also clearly defines credit loan application procedures, provision of bank investment capital, and a product-sharing system to be applied to people investing in forest development.

**UN Project To Help Conserve Biodiversity**

*BK0108080692 Hanoi VNA in English 0749 GMT  
1 Aug 92*

[Text] Hanoi, August 1 (VNA)—An international project has been launched to help in the conservation of biodiversity in Vietnam.

The project is undertaken by Global Environment Facility (GEF), a comprehensive programme aimed at giving special consideration to global environmental problems.

The first phase of the project was signed in Hanoi on Friday between Vietnam's Government and the United Nations Development Programme, at a ceremony attended by Phan Xuan Dot, minister of forestry; Professor Le Quy An, deputy head of the State Committee for Sciences; and senior officials from the State Planning Committee and the Office of the Council of Ministers.

Also participating in the ceremony were Mr. Luiga Faumui, UNDP acting resident representative; Mrs. Victoria Heymell from the International Union for Conservation of Nature and Natural Resources (IUCN); and Mr. Roger Cox from World Wildlife Fund International (WWF).

It is reported that population pressure combined with decades of war have stripped Vietnam of half of its forest cover and many rare species have become extinct. The remaining valuable endemic species are increasingly threatened as ever-growing economic lead to the clearing of 100,000-200,000 hectares of natural forest every year. Remote sensing data indicate that only about 2 million hectares of primary forest remain.

To protect the remaining natural forests, the government has proposed an extensive system of forest reserves and national parks. This system of reserves is only a starting point for the conservation of biodiversity. Many of the reserves are too small and too damaged for effective biodiversity conservation. The present habitat coverage does not encompass the full diversity of the country's endemic species and botanic distinctiveness.

The government has made a good start in the conservation of biodiversity. Further progress in this area is not only constrained by an inadequate capacity to plan and manage biodiversity conservation activities and a severe shortage of funds to devote to these activities, but by the lack of trained personnel. To meet the need for extension to some existing reserves and protected areas, and to draft long term plans for the protection of biodiversity, the government requires both further training for its practitioners in the short term and for its planners in the longer term as well as funding. The GEF project will be funded by a USD 2,999,959 grant from the GEF core fund and an in-kind contribution of dong 856,200,000 from the government. It will promote conservation of the remaining forest cover and protect biological diversity by strengthening the government's capacity to implement projects in this area.

Upon the project's completion, Vietnam will be better equipped to undertake future conservation initiatives through GEF and other funding mechanisms for model projects in protected area development, buffer zone establishment, greening the bare midlands, and the sustainable utilization of natural living resources, including marine areas.

### **Council of Ministers Issues Directive To Preserve Elephants**

*BK1608085492 Hanoi Voice of Vietnam Network  
in Vietnamese 0500 GMT 11 Aug 92*

[Text] Recently, three herds of elephants totalling 37 in Ba Ria-Vung Tau Province stampeded due to the lack of forest areas for them to roam in. Some of the elephants even damaged the houses and ricefields of the local people. Moreover, the furious elephants killed a few people and some people, in return, killed seven elephants.

To ensure safety for the local people's daily life and to preserve the rare animals, the Council of Ministers chairman issued a directive urging the agencies concerned to drive the elephants back into deep forests. The Ministry of Forestry is making preparations to carry out this task. The ministry immediately urged the local people to protect the lives of these elephants as they protect their own lives and their ricefields. The ministry also called for efforts to expand the forest areas in the Cat Tien National Park from 38,000 to 83,000 hectares so as to create more room for the elephants. The ministry has sent a team of forestry officials to Malaysia to study the utilization of paralyzing bullets so as to move the elephants to the Cat Tien National Park this summer.

The Ministry of Forestry will launch a campaign to encourage the people at home and abroad to drive the elephants back into deep forests by giving them 30

percent of the value of the elephants. The ministry also called for efforts to expand national parks and natural preservation zones from 1 million to 2 million hectares. It urged agencies concerned to plant trees on 60 million hectares of land to preserve rare animals in order to enrich biological studies.

### **State Allots Forest Land to Households, Cooperatives**

*BK1908154592 Hanoi VNA in English 1520 GMT  
19 Aug 92*

[Text] Hanoi, August 19 (VNA)—Up by June 1992, the state had allotted 5.23 million hectares of forest and forest land to 789,750 farmer households and thousands of cooperatives, production collectives and schools for management.

Allotment of land and forest to individuals and collectives for long-term rent for plantation and exploitation has been a major policy introduced by the forestry sector since 1968.

Since then 1 million hectares have been afforested, 500 hectares put under subsidiary and industrial crops, and 8 billion timber trees planted on scattered plots.

Meanwhile, the state had placed 4 million hectares of forest and forest land under the management of 426 state-run forestry establishments.

## REGIONAL AFFAIRS

**CSFR's Strasky on Hungary's Abrogation of Gabčíkovo Dam Treaty***LD1008174592 Prague Stanice Ceskoslovensko Radio Network in Slovak 1600 GMT 10 Aug 92*

[Text] Rudolf Chmel, Czechoslovak ambassador to Budapest, delivered a letter from Federal Premier Jan Strasky to Hungarian Premier Jozsef Antall today in response to Jozsef Antall's 19 May letter, voicing the Czechoslovak Government's disappointment at the unilateral measure through which Hungary abrogated the bilateral Gabčíkovo-Nagymaros hydroproject treaty. The letter recalls that Hungary took this measure just as the EC's diplomatic activity aimed at forming a tripartite commission to evaluate special aspects of the Gabčíkovo-Nagymaros construction comprehensively was nearing its objective. Federal Premier Strasky's letter reaffirms the Czechoslovak position, according to which the Hungarian Government has no legal reason to suspend unilaterally the validity of the international agreement and to which the measure it took has no legal effect on its validity either. Despite this, the Czechoslovak Government is still very interested in solving the water barrage problem and in continuing dialogue between the two states. This is why it intends to ask the EC to grant further assistance in the quest for a sensible compromise over the present situation, based on the valid international treaty of 1977. The Czechoslovak side is willing to do its best to ensure that these talks succeed, Jan Strasky's letter concludes.

**Austria Denies Supporting Gabčíkovo-Nagymaros Dam Project***LD1008200792 Budapest MTI in English 1321 GMT 10 Aug 92*

[Text] Budapest, August 10 (MTI)—After two U.S. environmental organizations, the Sierra Club and the Audubon Society, accused Austria of supporting the construction of the Gabčíkovo-Nagymaros water barrage and called for an international boycott against that country, the Austrian Embassy in Budapest sent a statement to MTI on Monday.

According to the statement, Austria has already informed both organizations that the accusation of Austria's bearing joint responsibility for constructing the project and endangering the environment is completely groundless. Both Federal Chancellor Franz Vranitzky and Federal Finance Minister Franz Lacina announced that not even in the future would the Republic of Austria assume a guarantee for any related credit. The Austrian Electricity Management Co. has no intention of taking over electricity from Hungary. Nor are the technical conditions and capacities available for the transfer of electricity to Austria or a third country.

However, Austria is not in a position to assume responsibility for the actions of private individuals and their

firms, wishing to contribute to financing the project. In a pluralistic democracy like Austria the government cannot forbid any private venture until it violates the law.

Austria hopes that the ecological organizations will take note of its position, and reconsider their boycott call, the statement says.

## BULGARIA

**Cabinet Decides To Discontinue Uranium Extraction***AU1308170792 Sofia BTA in English 1650 GMT 12 Aug 92*

[Text] Sofia, August 13 (BTA)—The government today decided to discontinue uranium extraction in this country.

It approved a schedule for the closing down the production of uranium raw materials and concentrates in 11 commercial partnerships. "This will be done in several stages by 1994, providing alternative jobs for employees," Minister of Industry Rumen Bikov told journalists.

The Ministry of Finance will provide 399.4 million leva on an extrabudgetary account for investment, liquidation and other expenditures (1 dollar exchanges for about 22 leva). The Finance Ministry should provide an additional 207 million leva to pay liabilities to suppliers and wages. An overall 357 million leva in corporate debts, interests on them and temporary financial aid will be transformed into a national debt.

The cabinet recommends municipalities on whose territory the enterprises are located to work out and coordinate with the Ministries of Labour and Social Affairs and of Industry programmes to restructure production, create new jobs and retrain laid-off employees. To this end, municipal councils will receive financial aid.

The cabinet commissioned the Ministries of Industry and of the Environment to apply to international organizations for technical, technological and financial aid in closing down uranium extraction and restoring the environment in polluted regions.

**Trade Union Daily Defends Kozloduy Plant Prospects***AU1708085292 Sofia PODKREPA in Bulgarian 13 Aug 92 p 4*

[Boyan Apostolov article: "Kozloduy Nuclear Power Plant Needs Money and Common Sense, Not Arguments"]

[Text] The cluster of problems surrounding the Kozloduy Nuclear Power Plant that have accumulated over the years continue to be the center of attention, not only because of the plant's exceptional importance for our economy, but also due to the international interest

and concern for its safety. The big question now is not whether anything is being done to improve the operation of the huge complex, but whether what is being done is sufficient within the context of the country's real possibilities.

Following the proposal of the Committee for Peaceful Uses of Atomic Energy, the old Nos. 1 and 2 reactor units have been shut down for overhaul; according to preliminary estimates, the first unit should reenter service in November 1992, and the second toward the end of March 1993. According to the plant's director Kozma Kuzmanov, the program is being implemented despite immense difficulties—mainly financial ones. It is clear that the nuclear power plant provides a lot and takes little, and it depends on the will of the government how much it will receive for its development. It is not clear when the Ministry of Finance will carry out the audit that has been demanded, or when the 3 million ECU [European Currency Units] will be received from the PHARE Program [Economic and Reconstruction Aid for Poland and Hungary Program], or when changes will be made to the regulations of the National Electricity Company that limit the plant's economic independence. Nuclear experts are convinced that the settlement of these questions brooks no delay because the changeover from Soviet to Western standards is costing a lot of money, as well as the work on the EC-licensed program to improve the functional capabilities of the plant. In addition, the remaining four reactor units have to be shut down in sequence for completion of prescribed maintenance work.

Lyulin Radulov, chairman of the Power Industry Committee, is convinced that the subsidized energy industry was a product of the centralized planned economy. However, market principles will make electricity very expensive, and one also has to allow for inflation. A safety net has to be provided for people who cannot afford to pay, adds National Electricity Company Chairman Nikita Shervashidze, and we must stop the wasteful use of electricity for central heating.

The Kozloduy Nuclear Power Plant presently employs 6,000 people, 1,000 of whom are engineers. International safety standards are improved every year, however, and it is still uncertain whether the plant will be given the 10 million dollars needed to build its training center. Some of the staff also have to be replaced, but applicants are few, and the social problems are unresolved. One should not ignore the fact that the cost of living in Kozloduy is 30 percent higher than in other towns. The leaders of the trade unions at the plant all agree that the main problem does not lie in salaries, but in normal working conditions, despite the fact that better qualified operators earn 20 times less than their Western colleagues. The mayor of Kozloduy admits that the trade unions have done much to assist the municipal administration to prevent incidents between the local population and representatives of ecological movements protesting against the nuclear power plant.

No one is any longer under the illusion that the problems inherited from the past will be solved quickly. Years will be needed to achieve this, as well as money and people prepared to make responsible political and technological decisions, so that we no longer will be hostages to chance circumstances and economic interests that have nothing to do with chance. Perhaps we will also have to alter our attitude to the people who hardly ever have a rest day and who are obliged, no less than us, to pay for others' sins. We should not make unnecessary allowances for them when they mix things up, but neither should we expect miracles from them.

### Ministry Bans Import of Toxic Sand From Austria

AU1808143392 Sofia BTA in English 1334 GMT  
18 Aug 92

[Text] Sofia, August 18 (BTA)—On August 15 Radio Deutsche Welle commented on the increase in the illegal export of waste and toxic substances from Germany and described it as an organized crime committed by a new mafia. It was stressed that the road to eastern Europe, Bulgaria included, is rather short. Romania, Czechoslovakia and Bulgaria were listed as the preferred partners for such deals.

ZEMYA wrote recently that preparations were under way for the import of sewage from Austria. The newspaper said the Agriculture Ministry, the Pedology Institute and two Austrian companies—Johann Glatz and Korund—were involved in the deal. Quoting an anonymous source close to the parties involved, the newspaper wrote the Bulgarian partners expected to win at least 5 million dollars. The sewage would be transported free of charge.

Bulgarian radio recently reported that the Sofia-based Niproruda Company and Gypsum Ltd. of the village of Koshava, Vidin region, (northwestern Bulgaria), were negotiating a sand supply from Austria with Korund. Reportedly, the sand would be used to fill empty galleries in the Koshava Mine. The Austrian side was ready to cover the transportation costs and pay an additional 10 million leva (400,000 U.S. dollars) for a shipment of 50,000 tonnes of sand. Villagers expressed their concern caused by expert statements, according to which analyses had shown the sand contained toxic substances. The Koshava Mine lies next to the village's water-supply area and its drinking water may be polluted.

The Ministry of the Environment has banned the import of this toxic sand, Kolyo Yotov, chief of the Subsoil Resources Department with the ministry, said on national radio early this morning. The ministry has sent the Austrian company an official letter.

There have been landslides in Koshava, there being empty galleries under the village.

This is one of 40 or 50 instances in which Western companies dealing with toxic waste export have tried to

penetrate into Bulgaria, Environment Minister Valentin Vasilev said on national radio this morning. He said the ministry has not licensed and will not grant a licence to these companies. "I believe they realize they have no chance here and there have been few offers of this kind in the last three months," Mr. Vasilev said. According to him, the companies have realized Bulgaria will not become Europe's dump.

### **Government Adopts New Rule in Power Supply Sector**

*AU2008201292 Sofia BTA in English 1552 GMT  
20 Aug 92*

[Text] Sofia, August 20 (BTA)—The Bulgarian Government today approved a production and transfer of electric power bill which creates conditions for competition in this industry as it extends preferential treatment to small utilities using renewable energy sources: Wind, solar and water power and biomass.

Under the bill, acting through the government consumers will have to right to set requirements to electricity supply entities for power supply cuts through their fault or for supply of low-quality power. According to the bill, electricity may not be imported without government permission.

At its meeting today the Council of Ministers gave the National Electricity Company the right to remedy against consumers who default in the payment of their electricity bills. The National Electricity Company and the consumers in the public and consumer-services sector will sign special contracts including clauses on extra deposits and advance payment covering expected energy consumption for one or two months.

### **Ministry Announces Lower Pollution Levels in Ruse, Silistra**

*AU2508165492 Sofia BTA in English 1533 GMT  
25 Aug 92*

[Text] Sofia, August 25 (BTA)—The Ministry of the Environment told BTA that the monitoring of the air in the Danubian city of Ruse is continuing at six points and covers the following basic pollutants: hydrogen sulphide, nitrogen dioxide, sulphur dioxide, dust, lead, chlorine, and hydrogen chloride. The comparative analysis shows a drop in their concentration from last year. A drop in hydrogen chloride pollution has also been registered. Concentrations exceeding the maximum admissible levels were measured only in some samples taken on August 13, 14 and 15. This improvement of the environmental situation is the result of the agreements reached between Bulgaria and Romania and the subsequent measures. The gassing of Ruse in August, however, shows that many problems concerning air pollution from the Verachim Combined Works in the Romanian city of Giurgiu are yet to be solved.

In order to get an accurate picture of air pollution in Ruse, additional samples are being taken to be studied for the presence of organic substances. The first results for the August 14-17 period showed the presence of traces of aromatic hydrocarbons, chlorine organic and sulphur organic compounds, and phenols, all below the admissible levels. Some unidentified components were registered in samples taken in the night hours of August 13 and 14. Work on their identification is continuing, as well as the analysis of the samples taken after August 18. The Ministry of Health Care is carefully following the situation and will comment on any health risks for the population.

The results of the analyses will be used at the negotiations with the Romanian side due to be held in September.

Constant control has also been established over air pollution in the second Bulgarian Danubian city of Silistra, which is also gassed from the opposite bank of the river. Samples taken at three points every three hours are checked for hydrogen sulphide, nitrogen dioxide, sulphur dioxide, phenol, lead, and dust. The analyses show that the monitored substances do not exceed the average daily maximum admissible levels. But in some samples taken on August 11, 12 and 17 the concentration of phenols and hydrogen sulphide were twice the one-time maximum admissible levels.

A mobile automatic emission control laboratory of the Ministry of the Environment arrived in Silistra on August 21 to monitor the concentrations of carbon monoxide, oxygen, sulphur dioxide, nitrogen oxide, nitrogen dioxide, hydrogen sulphide, dust, general hydrocarbons and the meteorological data. Air pollution measurements are taken every minute and the average is calculated per hour. The results show that the concentrations of the monitored substances are within the average daily and maximum admissible levels. That is why when there are reports of gassing individual samples are sent to Sofia to be analysed for the presence of other possible organic air pollutants.

## **CZECHOSLOVAKIA**

### **Czech Ecology Minister Inspects Dukovany Nuclear Plant**

*AU1308191192 Prague LIDOVE NOVINY in Czech  
1 Aug 92 p 2*

["(ld)"]-signed report: "New Minister, Old Problems"]

[Text] Dukovany—The new Czech minister of ecology, engineer Frantisek Benda, became familiar with the problems connected with the only nuclear power station in the Czech Republic and with the opinions of the people living in the Dukovany region. Representatives of the Energoregion 2020, which associates 120 communities in the 20 kilometer belt surrounding the Dukovany



nuclear power station, also participated in the meeting with mayors of the cities in the vicinity of the power station.

The minister received detailed information on measures to be taken to increase nuclear safety. It was stressed that the water pressure reactors installed in Dukovany differ completely in construction from the reactors of the Tschernobyl type. The monitoring of the power station's operation has shown that the radiation effect is lower than the fixed limit, and is even lower than in the vicinity of coal power stations of comparable output.

The most topical problem is the construction of intermediary storage place for spent fuel. In a recent competition, technology provided by the German firm Nukem was selected, and so nuclear waste will be stored in dry containers of the Castor 440 type. The operation of the entire power station depends on the construction of the storage place. The station delivers into the electric energy network an amount of energy which is equal to one-fourth of the total energy consumed in the Czech Republic. Frantisek Benda provided information on the talks between the Czech Ministry of Ecology and the state agency for supervision over nuclear safety. He assured the representatives of the region that under no circumstances will he agree to the installation of a container on CSFR territory which would not be licensed in the country of its producer. He also stressed that his ministry will firmly insist that the Czech Government provide state guarantees regarding the problem of completing the nuclear fuel cycle. At the same time, the ministry will push for an early passage of the law on nuclear waste handling. The lapse of the former government must be corrected. At the same time, a fund must be established to finance the processing of nuclear material at the end of the fuel cycle—that is, the annihilation of radioactive waste and liquidation of nuclear power plants after they are put out of operation. The main reason for establishing this fund is to ensure that our children will not have to pay for our debts. This would be contradictory to the principles of market economy and our moral principles, too.

#### **Environment Official on Proposed Chemical Agent Inventory**

*LD1408133192 Bratislava Rozhlasova Stanica  
Slovensko Network in Slovak 1630 GMT 11 Aug 92*

[Interview with Slovak Environment Commission Chairman Jozef Zlocha by correspondent Michal

Tvarozek on the proposal to inventory Slovakia's chemical agents discussed at the Slovak Government's regular session in Bratislava on 11 August—recorded]

[Text] [Zlocha] The purpose of this inventory is straightforward. We should discover which chemical agents and preparations are produced in Slovakia and which are imported into our country. [passage omitted]

[Tvarozek] What chemical agents will be inventoried?

[Zlocha] It would be best to inventory all of them. However, that won't be possible in the initial stage, when much will depend on a voluntary approach. The government discussed this proposal to ensure cooperation everywhere these agents are produced and everywhere indigenously produced or imported agents are used. We do not expect to record everything. However, we will publish the results and will seek public opinion on the appearance of these agents in residential areas.

[Tvarozek] When will this survey begin? I presume that its pressing nature will make you sum up the results pretty fast.

[Zlocha] We are ready for it. The survey will begin on 1 September and should be completed by year's end.

## **POLAND**

### **Radioactive Pollution at Pre-Chernobyl Level**

*LD1508092792 Warsaw PAP in English 1718 GMT  
12 Aug 92*

[Text] Warsaw, Aug. 12—The level of radioactive pollution in July did not change as compared to the level recorded in 1985, before the Chernobyl power plant disaster, the central laboratory for radiological protection has announced.

Only the level of caesium pollution remains somewhat higher than usual but, in accordance with laws of radioactive disintegration, it will be slowly falling. The content of radioactive caesium isotopes in basic articles of foodstuff like milk, meat, cereals, fruit and vegetables is low and does not exceed a dozen becquerels per kg.

## REGIONAL AFFAIRS

**Argentina, Chile Sign Agreements on Patagonia Border**

*PY0108024692 Santiago Television Nacional de Chile  
Imagen Internacional in Spanish 0000 GMT 1 Aug 92*

[Text] Argentine Foreign Minister Guido Di Tella has said the treaty signed by Presidents Aylwin and Menem, settling the conflict over the Patagonia continental ice shelf, will be approved by the Argentine Congress without problems.

Di Tella, along with Foreign Minister Enrique Silva Cimma, today signed the Chilean-Argentine integration agreements.

Confirming the excellent level of relations between Chile and Argentina, the closing of the binational integration meeting in Santiago was attended by top-level officials, namely the respective accredited ambassadors and foreign ministers.

Argentine Foreign Minister Guido Di Tella travelled to Santiago at a time when a congressional group in his country's Congress announced that it will not ratify the treaty that finally defines the border in the Patagonia continental ice shelf.

The Argentine foreign minister emphasized that these groups represent a minority.

[Begin Di Tella recording] There will be no problems with ratification. Of course, there are groups on both sides that always find problems, especially when the countries are advancing in a really extraordinary cooperation and integration drive, which I believe is a substantive feature that must be emphasized. [end recording]

Di Tella also confirmed that President Carlos Menem will visit in late August.

## BRAZIL

**'Critical' Mercury Levels Registered in Madeira River Area Population**

*PY1108180492 Rio de Janeiro O GLOBO in Portuguese  
8 Aug 92 p 25*

[By Cilene Pereira]

[Text] Sao Paulo—The mercury contamination of people living on the banks of the Madeira River, in Rondonia, has reached critical levels, in some cases higher than the levels registered in Minamata, Japan, where thousands of people died or had their brain functions seriously damaged after being contaminated by mercury.

This conclusion is one of the most important results of a project being performed by Brasilia University (UnB)

researchers at the Health Ministry's request. The specialists in human ecology wanted to discover the degree to which the people have been affected by mining activities in the region.

UnB researchers did not need much work to discover the magnitude of the environmental tragedy affecting people living near the Madeira River. The people who were studied live on the banks of the river between Porto Velho, Calama, and Cunia, which are towns located near the Belmonte mining area.

Even during the project's initial phase, scientists discovered through quantitative analyses of mercury in people's hair that almost 50 percent of the cases had high levels of contamination.

At least four, however, reflected at the time the sample was taken—some nine months ago—levels higher than 100 parts per million (ppm). The acceptable level set by the World Health Organization is 10 ppm (10 micrograms of mercury per gram of hair). The four individuals had 145, 156, 203, and 303 ppm.

According to reports on Minamata, everyone who had more than 191 ppm in their hair had symptoms of contamination. The most frequent symptoms were the loss of hearing, loss of vision, and deterioration of motor functions, among other neurological symptoms.

However, the organic damage caused by mercury in the people living on the banks of the Madeira River could not yet be properly established. For the time being, scientists are trying to increase the number of analyzed samples. Thus far, 346 individuals have been studied, among whom 164 had high contamination levels. Of this figure, 63 were above the critical 100 ppm mark.

Says researcher Antonio Barbosa, of the UnB Department of Chemistry and one of the men responsible for the work: "We now need to increase the number of samples and to analyze contamination levels among miners. We want to more carefully process this information and check the socioeconomic levels and nutritional habits of these people so that we may suggest the consumption of fish less contaminated by mercury."

## DOMINICAN REPUBLIC

**Environmental Plan To Relocate Rural Families**

*92WN0681A Santo Domingo LISTIN DIARIO  
in Spanish 27 Jun 92 pp 1, 16*

[Article by Maximo Manuel Perez]

[Text] Yesterday President Joaquin Balaguer ordered the evacuation and relocation of about 2,000 families living in an area of approximately 440 square km that has been classified as ecological preserves and aquifers of various rivers. This is part of a plan that will require an investment of 350 million pesos its first phase.

This decision was adopted during a cabinet meeting at the National Palace at which the chief of state presided.

In this connection, the president of the Republic promulgated Decree 199-92 prohibiting all human activity in the areas adjacent to or near the Nizao, Mahoma, and Mahomita Rivers. They are the main sources of supply for the Valdesia and Jigüey-Aguacate Hydroelectric Complexes and the Valdesia-Santo Domingo Aqueduct.

At the conclusion of the cabinet meeting, agronomist Cesar Sandino de Jesus, the agricultural adviser to the executive branch and the official in charge of the Nizao River Basin Reforestation and Conservation Project, said that this plan will be launched immediately.

"About 2,000 families, which will have to be relocated, will be affected. It should be noted that all of the forest cover of the headwaters of the leading rivers in the country has been stripped away, and the damage done to the forests in these zones is truly alarming."

This official said that "there is no suitable measure other than the imposition of a prohibition on this zone, because man has been working there in an improper manner. It must be understood what the headwaters of the five principal rivers in the central range represent. We are talking about an area of some 150 square km along the upper part of the Yuma River Basin, at an altitude of 1,400 meters."

He said that "the headwaters of the Nizao, Mahoma, and Mahomita Rivers are also affected."

"It must be realized that the prohibition on these 440 square km is more than an ecological requirement," Sandino de Jesus said. "It is a national necessity, because if we do not provide for the preservation and protection of the aquifers of these rivers, which are the two main rivers of which multiple uses are made, the future losses suffered by the people as a whole will be tremendous."

He added that President Balaguer instructed him personally about the relocation of the families living in the prohibited zones. He said that "a survey of these families is in progress now, and we are proceeding in harmonious fashion so that the families can be transferred and relocated as the need requires."

Sandino de Jesus said that "four FAO [UN Food and Agriculture Organization] technicians who are assisting us are participating in the drafting of the budget for the five-year period, as are some 20 Dominican technicians, including a doctor of agronomy."

Sandino de Jesus explained that the first phase of the project will cover the relocation of the families.

He explained that the families affected by the construction of the Jigüey Dam reservoir have already been relocated in a settlement in which housing was built, near San Jose de Ocoa. The families in the Aguacate Dam reservoir area will be relocated soon to Hato Dama, in the same zone.

This official explained that the first transfer will affect about 500 families, who will be resettled in Rancho Arriba. The land there on which their homes will be built has already been selected.

## HONDURAS

### Agriculture Encroaches on Last Broadleaf Forest

92WN0665B Tegucigalpa EL HERALDO in Spanish  
10 Jun 92 p 5

[Text] The advance of a wave of settlers consisting of lumbermen and ranchers has reached the only area of broadleaf forest in Honduras. On 9 June, representatives of the ethnic groups living in the Department of Gracias a Dios complained of this situation.

The indigenous people went to Tegucigalpa on 9 June to pay a call on government authorities, because members of the Tawahka Sumu tribe, one of the ethnic groups most affected, are being left practically without forest land.

They explained that the problem, which is the result of the expansion of agricultural and ranching settlements, has worsened in 1992. The situation is endangering one of the last primary forest areas in Central America.

The area affected is in the southern part of the Rio Platano Reserve, where a large part of the few forests remaining in Central America has been cut down mercilessly.

Soriano Cardona Salinas, of the Tawahka Sumu ethnic group, explained that at present there are 12 families, each consisting of several persons, who have even brought cattle to be pastured throughout the area.

He mentioned that people coming into the area are taking over the best land along the banks of the rivers without having any title certifying them as the legitimate owners.

Five communities of the ethnic group, with a total population of 800 to 1,000 people, have lived in the area for centuries, making rational use of the forests they own.

The indigenous people are asking for the title to the land requested by the Tawahka Sumu group to be legalized, using the device of a protected forest area, which will be called "The Tawahka Forest Reserve." This region is located in the southern part of the basin of the Rio Platano. This latter area has not been affected, specifically because it is protected as a reserve forest area.

The people involved complained that they have made three requests to Cohdefor [Honduran Corporation for Forest Development]. However, this office has ignored their petitions. Therefore, the people are asking that further settlement in the forest reserve area should be halted. This would prevent the entry of more people who would continue destroying the forest.

**Trend Toward Reduced Forest Protection Causes Concern***92WN0665C Tegucigalpa EL HERALDO in Spanish  
13 Jun 92 p 24*

[Text] San Pedro Sula—More than 15,000 hectares of pine forest were destroyed by forest fires in the La Mosquitia area of the Department of Gracias a Dios during 1991, according to reports obtained by EL HERALDO.

The economic losses have been estimated at an average of \$2,000, or 10,800 lempiras, per hectare, plus the ecological damage caused by a forest fire.

According to these figures, in the La Mosquitia area alone, Honduras lost a total of 162 million lempiras because of the budgetary limitations of the Honduran Corporation of Forest Development [Cohdefor] and the lack of a government program for the protection of the forests.

The Honduran forest area is facing one of its worst crises. According to information provided to this newspaper, by the year 2000 it will only be possible to provide partial protection to 18 percent of the national forested area. This implies an annual destruction of 90,000 hectares.

In 1966, the government provided almost 100 percent protection for the forests. However, this level of protection was reduced to 41 percent by 1986, 20 years later. If the present trend continues, by 2000 barely 18 percent of the forest will be half protected.

The greatest danger of destruction is in the La Mosquitia area because Cohdefor only has six employees to take care of thousands of hectares and these people do not have adequate equipment to do their jobs.

Because of the difficulties facing the Cohdefor employees in Puerto Lempira, in the Department of Gracias a Dios, when a fire breaks out in La Mosquitia and they succeed in locating the place, they have no alternative but observing where the fire is going to die out, "because we cannot do anything else." This was once stated by Alexis Orteiz, the chief of the forest region.

The felling of trees by lumbermen and people employed in selling wood, not to mention those engaged in agriculture, should also be added to the list of problems.

**Deforestation Threatens Hydroelectric Operations***92WN0665A San Pedro Sula TIEMPO in Spanish  
14 Jun 92 pp 8-9*

[Article by Serapio Umanzor Diaz]

[Text] At a time when warnings are being made about an energy crisis, one of the hydroelectric generating stations in the country is on the point of no longer being in service because of the total deforestation in the catchment area that feeds water into it.

That is the reality facing the El Nispero Hydroelectric Center, constructed at a cost of 92 million lempiras. Today its contribution to the national energy system is threatened with paralysis because the River Palaja, on which it depends, is fed entirely by rainfall.

During the 1970's, the National Enterprise for Electric Power [ENEE] studied the El Cajon Hydroelectric Project. At the time, it also began the study of small-scale projects to satisfy the demand for electricity.

In 1976, it became clear that the El Cajon project could not enter into operation in time to satisfy the approaching demand for electricity.

Therefore, it was decided to build the El Nispero Hydroelectric Center. According to the authorities at the time, the project was economically more favorable than other alternatives.

Furthermore, its construction would contribute to the rural electrification of the northwest area of the country by expanding the system for the transmission of electricity to some of the communities not covered by the interconnected system of the ENEE.

Therefore, construction was begun on the El Nispero project to help to meet national demand for electricity until the El Cajon project began operation.

On 14 September 1982, the turbine generator complex of the El Nispero Center turned for the first time. On 25 November 1982, the center entered into service in the ENEE's interconnected grid. The project is located in the Municipality of El Nispero, in the Department of Santa Barbara.

Some groups questioned the selection of the site and alleged that political interests had been involved in the construction of the project.

Rolando Rodriguez, chief of the El Nispero Center, indicated that the project has an operational reservoir with a capacity of 350,000 cubic meters of water. In real terms, this is small, because it was not intended to operate around the clock.

Instead of a dam, earthen dikes were built to contain the waters of the Palaja River, which is formed from the Malapa and Carcamo Rivers.

The waters of the Palaja River are enclosed with a spillway composed of six radial sluices with a discharge capacity of 1,150 cubic meters of water per second.

These steel sluices serve to carry away the trash swept along by the Palaja River during the freshets that develop during winter.

Rodriguez said that the water flows from the spillway into the operational reservoir through a mesh set between the various sectors to catch floating debris. Then the water enters into the power-generating canal, which is made of concrete.

The water then enters an intake structure, from which it is transported to the turbine or machinery building.

The El Nispero Hydroelectric Center has little future, in view of the substantial reduction of water levels in the Palaja River because of the deforestation in the basin area.

Rolando Rodriguez, chief of the unit, said: "To tell the truth, 90 percent of the basin has been deforested by uncontrollable fires set by people living here during the summer months."

He indicated that during the summer, the water level is substantially and progressively lower, year by year, and the Honduran Corporation for Forest Development [Cohdefor] and by the Municipality of El Nispero display indifference on the matter.

Rodriguez stated that on repeated occasions they have complained about the situation to Cohdefor and have even given them the names of those responsible for the deforestation. He added: "Nevertheless, it seems that the problem is not important to those people [in Cohdefor]."

He warned that "if immediate action is not taken to reforest the basin and to save the few forested areas that remain, this is soon going to be a problem. The truth is that we are already feeling it."

He emphasized that, over the short term, as deforestation continues, the water basin will dry up and it will only be possible to operate if there are rains during the winter.

He added that a thick forest used to stand above the machinery building, but was destroyed during the summer. "This layer of vegetable matter stabilized the slopes of the hill," he said.

Rodriguez said that during the winter, rock and mud slides could take place, "which could obstruct the flow of the river, turning it toward the machinery building and causing the loss of millions of lempiras. All of this has been brought to the attention of Cohdefor, but nothing has been done. Instead, this situation has worsened."

He questioned the group of people who continue deforesting the water basin area. He pointed out to them that the basin is made up of slopes that rise at an acute angle (hills). This makes the land unsuitable for agriculture.

He concluded: "This is land suited to forests, and these people are using it for agriculture. The truth is that everyone is an enemy of the trees here."

The deforestation situation is reaching such alarming levels that influential people in the town have deforested the area where drinking water is collected. The result is that there is no water during the summer.

Other problems at the El Nispero project include the effects of sediment on the reservoir. This problem has been worsened by the process of deforestation because

earth and branches are falling into the small reservoir, making it difficult to draw water from it.

Studies made at the beginning of construction of the hydroelectric center showed that sedimentation would progressively affect the use of the reservoir during the life of the project.

Calculations indicated the possibility of a significant amount of abnormal sedimentation. Therefore, the focus of the design included dredging material from the reservoir and depositing it in the river below the project.

In the absence of dredging, as the study suggested, at present the channel leading to the generator is cleaned out each year during the summer months with the help of a team from Secopt [Secretariat of Communications, Public Works, and Transport] and with the manual labor of 80 peasants working 24 hours a day for 45 days.

One of the people living near the El Nispero project said: "That generator is always being repaired, or the reservoir is being cleaned."

In Honduras there are four hydroelectric generating stations: El Cajon, Canaveral, Rio Lindo, and El Nispero. All of these generating stations are interconnected to provide electricity to the whole country, under arrangements made by the National Distribution Center of the ENEE.

During the summer, and as a result of the reduction in water levels, the El Nispero generator has been ordered to be interconnected with the other generating stations during so-called "peak demand" hours.

These hours run from 1030 to 1200 and from 1800 to 1900. "Peak hours include those periods when people come home and turn on their stoves and other electrical appliances. That makes electricity consumption shoot up."

Rolando Rodriguez said: "The importance of El Nispero lies in the fact that if the peak hours are not covered, electricity would have to be rationed or demand only partially covered with thermal powered generators."

The fact that this center generates electricity during peak hours makes it possible for the ENEE to reduce its expenditures for the purchase of bunker-type fuel oil by approximately 6.85 million lempiras per year. If El Nispero did not exist, it would be necessary for the thermal powered generators at Puerto Cortes and La Ceiba to produce electricity for extended periods of time.

From the substation at El Nispero, two transmission lines lead away to the substation of El Mochito, while a third transmission line goes to the city of Santa Rosa de Copan.

Rodriguez, pointing out that the El Nispero station is the smallest in the country, said: "If there are problems at El Nispero, Santa Rosa de Copan will be the first town to lose electrical service."

The El Nispero station has made it possible for 32 municipalities to be included in the ENEE electricity network: 10 in Santa Barbara, four in Lempira, 15 in Copan, and three in Ocotepeque.

The El Nispero station has produced an average of 55,462 million kilowatt hours annually. At a price of 0.17 lempiras per kilowatt hour, the income brought in is about 9.4 million lempiras annually.

The importance of protecting this investment of millions of lempiras is multiplied when it is considered that the ENEE has an annual increase in consumption of electricity of 11 percent. "And the addition of El Nispero to the interconnected grid makes it possible for the other hydroelectric stations to save water," Rodriguez said.

At present, one of the four turbines, or units, at El Cajon is off-line for maintenance, which makes it necessary to use the other hydroelectric generators.

In Guatemala, El Salvador, and Costa Rica, electricity is already being rationed because of problems at the hydroelectric generating stations for reasons similar to those at the El Nispero station.

Meanwhile, without any signs of interest in resolving the situation, the investment of millions of lempiras in the El Nispero station seems to be headed toward a total loss. Honduran businessmen have warned that soon there will be a shortage of electricity, which could be catastrophic because there are no plans in sight to prevent the problem.

## PARAGUAY

### Attempts To Dump U.S. Toxic Waste Rejected

PY2008231092 Asuncion ABC COLOR in Spanish  
20 Aug 92 p 11

[Text] High-ranking Government House sources stressed on 19 August that Paraguay has "flatly" rejected the attempt to introduce toxic waste into our country. This newspaper's consultation was due to the remarks made by representatives of the international organization Greenpeace that warned about the possibility that toxic waste from the United States would enter Paraguay and other Southern Cone countries.

In this respect, Health Under Secretary Carlos Insfran said that "the Health Ministry will not allow the entry of toxic waste from other countries."

Eulize Zugasti, director of the National Environmental Clean-Up Service (Senasa), said that "there is a law promulgated at the end of 1990 that absolutely prohibits the introduction of toxic waste into our country."

He added that punishment for violators is very serious, and that if it is true that there is an intention to bring toxic waste to our country, then the control barrier of the Health and Agriculture and Livestock Ministries and the National Navigation and Ports Administration (ANNP) exercise must be broken through.

The information about the possible arrival of toxic waste into the country was provided to local journalists on 19 August by Argentine Carlos Lopez Iglesias, Greenpeace's Latin American representative, who stated that the cargo was rejected by the Patagonian [Provinces], Argentina, and by Colombian customs authorities.

## BANGLADESH

### Government Seeks Mass Involvement in Afforestation Drive

92WN0697A Dhaka THE BANGLADESH OBSERVER in English 30 Jun 92 pp 1, 10

[Unattributed report: "PM's Directive To Involve People in Tree Plantation"]

[Text] A tree plantation week will be observed from July 1 as part of the government efforts to turn afforestation drive into a mass movement for maintaining ecological balance and environmental upgradation throughout the country, reports BSS.

In the backdrop of the recent Earth Summit in Rio de Janeiro of Brazil this year's tree plantation week in Bangladesh assumed a special significance. Foreign Minister Mostafizur Rahman led a high level delegation from Bangladesh to the summit and made valuable contribution to its proceedings.

The Government has geared up its activities to involve people in a mass scale in the tree-plantation drive in line with the summit declarations.

Prime Minister Begum Khaleda Zia has taken personal initiatives for the success at tree plantation drive.

Begum Zia has already directed her Cabinet colleagues to take up elaborate programmes and involve the people of all categories of the society in the campaign for planting and preserving trees.

In a letter to the Cabinet members the Prime Minister instructed them to take up broad based afforestation programmes in their own districts and districts under their charges during the tree plantation week as well as the entire tree-plantation season.

Begum Zia also directed the ministers to give necessary instructions and supervisory responsibilities to all concerned under their respective organisations, offices and establishments to take up massive plantation programme and make sure that each of the tree planted survives.

The Prime Minister said nursing of the planted sapling was essential for successful implementation of tree plantation. She underscored the need for taking up massive afforestation programme by the Non-Government Organisation on voluntary basis besides the Government efforts. Begum Zia said the programme could not be successful without the participation of all levels of people of the society.

Describing the significance of afforestation the Prime Minister said there was a need for one fourth forest coverage of the total land of the country for maintaining healthy environment. But, Begum Zia said, the size of the forestry was much less than the desired one. A large part of the forestry has already been eliminated due to

the increasing pressure of population that created new demand for habitation, cultivable land and firewood, the existing size of the forest in the country was insufficient for maintaining ecological balance, she said, adding as a result adverse effect on environment has been created. Under such circumstances the expansion of forestry was necessary.

The Prime Minister underscored the need for planting trees in every nook and corner, including fallow high and low land office premises, educational institutions, fallow and adjacent to the residential houses and beside roads and embankment to meet the forest need.

Begum Zia hoped that the tree plantation drive would become successful with the united efforts of all quarters.

The Prime Minister has also invited the heads of diplomatic missions in Dhaka to join her in the tree plantation programme in the capital on July 1.

The office of the Prime Minister directed the local administration to include tree plantation programme during her visits to different areas of the country.

### Whereabouts of Contaminated Fertilizer Shipment Sought

92WN0698A Dhaka THE NEW NATION in English 7 Jul 92 p 5

[Editorial: "Toxic Chemicals and the Third World"]

[Text] The news of toxic dust mixed with genuine fertiliser and dispatched to Australia and Bangladesh under its guise is one to be received with alarm. The whereabouts of this consignment is now of the greatest concern to both government and the people of the government should tell us without delay its present whereabouts and current condition. Considering the serious nature of this threat to health and environment, it is imperative for us to know where this cargo of deadly poisons is and take steps to impound it without delay. As most imported items come through local agents it should not be an impossible task to track it down without delay.

However, the serious nature of this crime is such that we cannot permit it to pass without comment. Apprehending the criminals who conceived and perpetuated this scheme, one of the most diabolical, unethical and immoral known to man, is clearly the responsibility of the law enforcing authorities of the country of origin and it is gratifying to note the persons believed to be responsible have already been apprehended and charged with the crime. This gives us some sense of satisfaction but can in no way appease the minds of all concerned citizenry in this, or any other country of the world.

Since the treaty regulating cross-border trade in toxic chemicals came into effect in 1990 individuals and countries attempting to send toxic wastes to other states are, in theory at least, subjected to stricter terms and conditions governing its dispatch and control. However,

like most international treaties and agreements, this is more dependent on an individual nation's good intent than through effective international policing and strict application of the law and, as such, incidents often get by unnoticed and untraced.

UNEP, the UN Environmental Programme responsible for the care and protection of the environment, who initiated the treaty is, however, fully aware most Third World countries are likely to fall victim to such consignments through either ignorance or fraud. Most of these nations lack the facilities and necessary technical know-how for disposal of toxic substances but when willingly accepted such states are generally aware of the nature of the substances they handle. There are instances, of course, where some have been duped as, for instance, Thailand who, not so very long ago, fell victim to one and several African nations who were "persuaded" to accept hazardous materials. This was, in fact, the basis for drawing up the treaty. In so far as we know, however, this is the first instance to come to light regarding the disposal of toxic matter in this manner. And it seems to us, all the more criminal when the intended victims are the poor in one of the poorest countries in the world.

The toxic substances introduced into the fertiliser are said to contain lead and cadmium, which causes brain damage and affects growth and, as always, the children are the most vulnerable. Once in the food chain, however, these substances will be less discriminating and will affect everything and everybody. Run-offs from this dubious "fertiliser" will affect fish and pollute water if it gets into the rivers and underground aquifers. History tells us "The Decline and Fall of the Roman Empire" and the idiosyncrasies of the last Caesars can be directly traced to lead poisoning from the intricate aquaducts which carried water into Rome. Today this is taken a step further for it is suspected men who are exposed to lead are in danger of producing damaged sperm which are the cause of babies being born with serious physical and mental abnormalities. Indeed not a happy thought for all the men who will be unwittingly exposed to this so-called "fertiliser" if it remains untraced.

Along with the United States who has already taken action under its own laws, the Government of Bangladesh, and the United Nations who has an overall responsibility for protecting the physical environment, must use every means at their disposal to trace the dubious "fertiliser." Such an act, coming in the wake of the recent Earth Summit at Brazil, serves only to accentuate the importance of greater international control over hazardous wastes so that such an incident cannot be repeated.

## INDIA

### Delhi's Environmental Record Scored

92WN0682A Calcutta THE STATESMAN in English  
16 Jun 92 p 6

[Editorial: "Biodegradable Promise"]

[Text] A Calcutta environmentalist was remarkably perspicacious when he predicted that the Rio Earth Summit would be the beginning of a "protracted" war between environment and development. As the curtain fell on the Brazilian "circus," several nations were found hesitant to sign even diluted versions of all the five principal documents. Yet the environmental battle has not been without minor victories. In India, the collateral gain has been a measure of public awareness created by the media blitzkrieg on the relevance of nature to humankind. But questions remain about the political commitment to environment, especially when confronted with the lures of lucre, so constantly offered by the so-called developmentalists. One fervently hopes, therefore, that Mr. Narasimha Rao, who was honoured with the opening slot at the three-day summit, was not playing to the gallery when he emphasized that "All countries must make credible commitments. India is certainly prepared to do so."

India's own environmental record however suggests that it has failed to follow the basic environmental tenet: "Think globally, act locally." It was thus all very well for the septuagenarian leader to upbraid the recalcitrant heads of nearly 100 states, who were using environment for political posturing and economic bargaining, but at home it is far more important that his Cabinet consider why the crucial notification under India's Environment Protection Act, 1986—to plug loopholes in procedures to clear projects from environment aspects—has not been officially gazetted. The draft notification was issued in January this year and environmentalists are not wrong in suspecting that lobbies of guilty industry associations in Rajasthan, Madhya Pradesh and Himachal Pradesh, not to mention New Delhi, and some controversial chemical companies are responsible for the Centre's procrastinations. Mr. Narasimha Rao cannot overlook the fact that his Government has not acted within the mandatory 60 days for dealing with objections. The Government it is learnt, has extended the period to consider these objections by a month which should be over within a week. Any further delay will raise serious questions about the sincerity of Mr. Narasimha Rao's pronouncements.

But quite apart from the legal aspects of the environmental problem are the purely social, economical and administrative aspects which cause an equal measure of concern. While it is fashionable, for instance, to talk about environmentally friendly products like a pencil made out of a non-toxic polymer, a substitute for wood, the fact is that such a pencil costs Rs. 18 and can expect to find no market in India. The eco-mark scheme is another such fashionable concept which is unfortunately backed by a meagre Rs. 2-lakh budget by the Environment Ministry. Noble though these concepts may be, they have to be handled sensibly, with a conscious effort to make people aware of what they mean at every stage and simultaneously such products must be made available at affordable rates. This is by no means an easy task in a country where the basic problem is feeding the millions. But if the Prime Minister is as committed to



providing the 850 million with a better life, as his reforms suggest, he has to ensure that his strategies do not collide with the forces of nature. Prosperity in India, it cannot be forgotten, depends on the rain, on agriculture and agro-based products. These are all gifts of nature and destroying nature can only lead to "sustainable impoverishment."

### **Wasteland Program Transfer From Environment Ministry Seen as 'Faux Pas'**

92WN0699A Madras *INDIAN EXPRESS* in English  
5 Jul 92 p 1

[Article by Usha Rai: "Transfer of Wasteland Development Programme; Environment Ministry Shaken by PM's Move"]

[Text] New Delhi—The transfer of the wasteland development programme to the Ministry of Rural Development is expected to put the clock back for this vital greening programme by at least 10 years.

The sudden move by the Prime Minister has left the Environment Ministry shaken and confused for wasteland development over the last couple of years has been largely in the degraded forest areas of the country. Of the 11 million hectares reclaimed or given a green mantle between 1985 and 1992, over half is degraded forest land.

Since most of the wasteland in the country is either so highly degraded that reclaiming it amounts to growing saplings in rocky terrain or the land itself is not available as it has been encroached upon, the National Wasteland Development Board had concentrated its efforts on the degraded forest areas.

Now with the wasteland responsibility given to the Rural Development Ministry, while the forests continue to stay with environment and forests, the Board will virtually have to start from the scratch. Further the major chunk of the funding for the Board's work—about Rs 240 crore annually—came from the forest budget. The wasteland development work has virtually been split between two ministries and coordination and integration of their work will be messy.

Political pundits see the transfer of wastelands to the Rural Development Ministry as clipping the wings of Mr. Kamal Nath, the Minister of State for Environment and Forests, who was seen as a high flier at the Earth Summit at Rio. Neither the Secretary to the department nor Mr. Kamal Nath were consulted about the transfer of wastelands.

Mr. Kamal Nath is believed to have contacted the Prime Minister on Thursday night itself when the new division of work was announced. On Monday, when the Prime Minister returns from Assam, he is expected to sort out the dual responsibility on the wasteland issue. Meanwhile, Col. Ram Singh, the new Minister for Wastelands, totally unaware of the problems of getting hold of

degraded land for development talks of "exporting Indian technology for regreening deserts in Saudi Arabia."

The splitting of the wasteland development work is as much of a faux pas as the initial announcement made by Rajiv Gandhi in 1985 that five million hectares will be greened every year. The Board, which was headed by Dr. Kamla Chowdhry, had a tough time just locating and getting areas it could reclaim. Though a third of India's land area or about 100 million hectares is degraded, it is either private wastelands; common land that has been encroached upon or areas difficult to reclaim like the Chambal ravines.

Therefore the Board cast its eyes on the comparatively easily to reclaim degraded forest areas. Though 12 of the 20 per cent forest area of the country is in fairly good shape about eight per cent is degraded. The forest officers resented the usurpation of their territory by the Board. As a forest officer pointed out "it was like the East Company that came to trade, then stayed on to rule." If they were given the kind of funds given to the Board, they claimed they could have restored the degraded forest areas.

After a lot of heartburn and much trial and error, on June 1, 1990, wasteland development got a new boost with a notification by the forest department that local communities would be involved in regeneration and protection of forest areas. For their labour they get wages in the first year, the right to forest grass in the second, and loppings and thinning in the third and fourth year. When the trees are finally harvested they will get 50 per cent of the sale proceeds.

New links were forged between the communities and the foresters and the NGOs acted as catalysts in getting the two together. So though the original purpose with which the Board was set up (reclaiming land outside the forests) got sidetracked, degraded and was being reclaimed. By growing fuelwood, fodder and grasses in areas around national parks and sanctuaries, the community pressure on the forests was being reduced. Now the clock has been set back.

### **Department for Wastelands Development Created**

92WN0683A Bombay *THE TIMES OF INDIA*  
in English 8 Jul 92 p 7

[Text] New Delhi, 7 July—The creation of a new department of wastelands development delinking this function from the ministry of environment and forests, is likely to provide the much-needed thrust to the pressing problem.

Further, the step will integrate the independent efforts of the National Wastelands Development Board (NWDP) under the ministry of environment and two related programmes—the Drought Prone Areas Programme (DPAP) and the Desert Development Programme

(DDP) administered by the ministry of rural development. The new department will be in the ministry of rural development.

Last week, while inducting new ministers into the council of ministers, the Prime Minister, Mr. P.V. Narasimha Rao, also created a new department of wastelands development with Col. Ram Singh as the minister of state.

Though the environment ministry is unhappy about the delinking of the NWDB, its performance in this sector has not been good. When the NWDB was set up in 1985, the then Prime Minister, Mr. Rajiv Gandhi, had set it a target of afforesting at least five million hectares of wastelands every year.

However, according to the environment ministry's record, only ten million hectares have been afforested in the last seven years realising the tardy progress. The NWDB analysed its programmes and decided to give it a new orientation in May 1992. The new strategy recommended greater involvement of people in regenerating the wastelands.

The NWDB's diagnostic exercise identified the following causes for the shortcomings in programme planning and implementation:

- Excessive emphasis on tree planting.
- Inadequate attention rural biomass needs.
- Absence of linkages with other components of village ecosystems.
- Inadequate involvement of local communities in planning, implementation and protection.
- Inequity in distribution of usufruct and benefits from plantations.
- Absence of independent monitoring and evaluation systems.
- Inappropriate species choice failing to take local needs into account.
- Inability to encourage village level institutions to take over management responsibility.

The task of hand is formidable. Of the total 329 million hectares (MHA) of land in the country, only about 266 MHA possess any potential for production. Of this, 143 MHA is agricultural land. It is estimated that 85 MHA suffers from varying degrees of soil degradation.

Of the remaining 123 MHA, 40 are completely unproductive. The balance 83 MHA is classified as forest lands, of which over half is denuded to varying degrees. Then less than 13 MHA is classified as pasture lands which support a record 406 million heads of livestock.

Thus, out of 266 MHA, about 175 MHA or 66 per cent is degraded to varying degrees. Water and wind erosion account for the degradation of almost 150 MHA out of this. Wastelands are degraded land which can be brought under vegetative cover, with reasonable effort and which

is currently under-utilised. The land which is deteriorating for lack of appropriate water and soil management or due to natural causes too fall under this category.

The wastelands development programme attempts to restore, through natural regeneration or appropriate intervention, the forest and tree cover both for ecological security and to meet the fuelwood and fodder needs of rural communities.

The objectives of the DPAP and the DDP, under the ministry of rural development, are similar. DPAP, launched in 1973, aims at steps to develop land, water, forest and pasture areas to restore proper ecological balance.

DDP, started in 1977-78, aims to halt the march of deserts, mitigate the adverse impact of drought, restore ecological balance and raise the productivity of land and water resources. The route: afforestation with emphasis on sand dune stabilisation and shelter belt plantation, grassland development, soil and moisture conservation.

DPAP is under implementation in 615 blocks in 19 districts spread over 13 states and DDP in 131 blocks in 21 districts in five states. DPAP has so far covered about 5.54-lakh sq. km. and DDP about 3.62 lakh sq. km., including the cold arid areas of Jammu and Kashmir and Himachal Pradesh.

While the allocation for these programmes last year was Rs. 11 crores (Rs. 56 crores for DPAP and Rs. 55 crores for DDP), the NWDB had allocated Rs. 115 crores for its plans in 1991.

## IRAN

### Iran's Water Resource Problems Examined

92WN0676B Tehran ABRAR in Persian 23 Jun 92 p 5

[Text] The large country of Iran is located in an area with dry and semidry climates. Its average rainfall is much less than the average rainfall of the earth. In addition, the rainfall distribution is very imbalanced in terms of place and time, with most areas of the country suffering from lack of rainfall or a shortage of rain for several months out of the year (sometimes more than nine months) during the dry season.

In the central and southeastern desert areas, even if this meager amount of precipitation occurs, it is rapid and passes quickly, which causes destruction in the form of flooding. Obviously, in such a country, providing water for various uses is difficult and sometimes requires heavy investment. Our ancestors also faced such problems and made many efforts to gain access to, store, and protect water. The existence of dams, which are several centuries old, qanats of more than 10 kilometers with the mother wells that are over 200 meters deep, and numerous old water reservoirs in various areas of Iran prove this point.

In order to become more aware of the limitations of the water resources in the country, the problems of water procurement, and the necessity for water conservation, we will travel throughout the country with this perspective in mind. We will start from the shores of the Caspian Sea, which has sufficient rain and should, apparently, have no water problems. But even in this area, which has a great deal of rain, we see that two to four months in the summer there is little or no rain, and farmers, particularly rice farmers, constantly complain about water shortages in this area and, in order to make up for the shortages, have built numerous water dams and dug shallow wells. On the other hand, in many of the cities along the coast, proper drinking water is scarce, and often they procure and transport water from far away areas through pipelines at huge costs.

You can see that at the start of this trip, which began in an area of the country with a great deal of rain, the problem of access to water when needed makes clear the limitations of water resources and points out the necessity of water conservation. We continue our journey to Azarbaijan and the Urmia Lake area, where annual precipitation is relatively sufficient, and with the low temperatures, there is little evaporation. But the dry and semidry seasons are much longer and require water reservoirs, and there is especially a need for underground water resources. This condition is true more or less in the western provinces of Iran, such as Kurdistan and Lorestan. The need for water due to the greater length of the dry season has resulted in the use of underground water resources in some of the plains in these areas at above the allowable level (for subsistence). Consequently, the gradual annual reduction in the underground water level and the deficit in the volume of the reserves is apparent. An example of such plains is Tabriz in Azarbaijan and some of the plains of Hamadan. Also, many cities in these areas face problems with regard to access to suitable drinking water, in terms of quantity and quality (Tabriz, Saqqez, Ilam, etc.).

We arrive at the rich Khuzestan area, which has large rivers, such as the Karun, Dez, and Kharkheh. Among the essential problems of this area is the control of the flow of water in the rivers and bringing water to farms that require more water due to the heat. Also, water management requires planning for the transfer of water from the upper parts of the river to the dry regions in central Iran, as at the present time, through the Kuhrang and other tunnels, some of the water of the upper parts of the Karun River is transferred to Esfahan, and efforts are made to make a share of it available to the hard-working, thirsty people of Yazd. The completion of all this requires very large investments, which increases the cost of water obtained and hence makes water conservation more necessary.

We move along the Zagros Mountain range to Fars, with relatively rich underground water resources in vast limestone areas. In this area, too, due to the need for water, not only the alluvium water resources but in some areas the reserves of limestone reservoirs as well are being

depleted. A clear example is in Dasht-e Jahrom. Also, due to the increase in the need for suitable drinking water in cities such as Shiraz and lack of resources to procure it from the alluvium water reserves of the plains, wells are being dug in the limestone layers in the heights above the plain to transfer water, which in turn results in the high cost of drinking water. From this area, we move to Hormozgan and Sistan and Baluchestan, where the amount of rainfall severely declines and where the composition of the heights and most other areas impedes the provision of water, and in addition, has a negative effect on the quality of water. The limited reserves are generally unsuitable and insignificant in terms of quality. Here, water becomes vital, and even for use in the cities, the possibility of access to water from faraway areas in the region is very limited and possible only at high cost. Water for these areas may necessarily become a costly imported commodity.

Finally, in the continuation of the journey, we arrive in the desert regions and the borders of the desert in the central and eastern parts of Iran, which make up the largest part of the country. In these regions, with the exception of the Alborz Heights, the level of rainfall is low; the dry or low-rain season is long; and the need for water is increasing daily. In most areas bordering the desert, underground water resources are vital, and in some plains the only sources of needed water.

The need for water has resulted in uncontrolled use of the limited resources, the decrease in the volume of underground water reserves, a severe reduction in water-table levels, and a critical situation in most of the important plains, which naturally threatens to dry up the underground water reserves and destroy much of the investment in agriculture and industry, even drinking water, for the cities. Among the critical regions in terms of water are the following plains:

Mashhad, Neyshabur, Sabzevar, Kashmar, Torbat-e Jam, and many of the southern plains of Khorasan, a number of the plains in Esfahan, Kerman, Rafsanjan, Yazd, Kashan, Qom, Semnan, Varamin, Karaj, and Shahriar.

At the end of the journey we arrive in Tehran—this unbridled monster of uncontrolled development and insatiable water consumption, a city which contains more than one-sixth of the nation's population, the population of which increases every day. Not only is providing water for this overrated city a major problem, where even the disposal of the waste water resulting from excessive consumption is a crucial problem, but also at the present time it consumes a major part of the water from the Karaj River and more than half that of the Jajrud River (two major rivers in the region; about 560 cubic meters annually). This is in addition to the amount of water that is pumped out of numerous deep wells for the drinking water of Tehran and the towns surrounding it. If we consider the next 25 years, in order to provide water for this unquenchably thirsty city drenched in water, there is a need for double the amount of water

consumed at the present rate, of which no more than one-third can be accessed from the underground water resources in Tehran, the remaining two-thirds of which will need to be transferred from other areas—even though the greatest part of the existing surface and underground water resources around Tehran are being used—and there are no other possibilities south of the Alborz Mountains. Hence, in order to quench the thirst of this unique city, a city of consumption engulfed in pollution, the upper branches of the rivers on the northern slopes of the Alborz, of which at the present some amounts of water are transferred to Tehran (through Lar Dam), must be used. To make such a transfer, it is necessary to build facilities at huge costs; consequently, the cost of every cubic meter of water will reach several times the present price. Hence, while the conservation of water is important for other areas, here it is imperative.

It is hoped that the fruits of this journey, with a view of the water problems and awareness of the value of water and the problems and difficulties in procuring water, are that we will look at the water that we have available as a valuable, life-giving, sacred element and as God's blessing and try not to waste or pollute it.

#### **Aquifer Management Urged To Counteract Escalating Land Erosion**

92WN0676A Tehran ABRAR in Persian 27 Jun 92 p 9

[Text] Every year, as a result of destructive floods, we witness the vast destruction of developmental and agricultural projects, residential units, and land throughout the country. This year, this trend, due to flooding rains in various parts of the country, is escalating rapidly.

With the implementation of necessary projects and proper aquifer planning in the watershed areas, not only can the occurrence of such damage be prevented, but also steps can be taken to save the surface and flood waters to supply drinking water and also increase agricultural production.

Aquifer management is the management of existing natural resources in an aquifer in order to make better use of it based on the information obtained from studies and the understanding of the natural parameters of the aquifer and its reactions.

The protection, revitalization, and development of water and soil to reach desirable and regular operation with the implementation of needed management, resulting in increased production, preservation, and ultimately ecological balance in an aquifer is the main goal of the aquifer care.

In order to reach this goal, the methods of identifying water and soil and the relative potential concerning the protection of water and soil through changing the existing parameters, the control of erosion and the subsequent harnessing of flood waters, the reforming and revitalization of plants to advance the standard of

living of the residents of the areas, the propagation of an awareness of aquifers and natural resources among the people, especially the villagers and tribes people, coordinating all developmental projects and economic, social, and political activities in the aquiferous regions, using resources and the participation of the people in planning and implementing water and soil projects.

In our country, 90 million hectares of pastures feed 100 million heads of livestock, which are the main source of food for the growing population of the country. The destruction of pastures which is followed by the vast erosion of soil is a great tragedy, and in order to prevent it, overall efforts must be made.

In order to provide the food needs of the increasing population of the country, which is projected to be 140 million in the year 1400 [21 Mar 2021-20 Mar 2022], necessary decisions must be made now. This is not possible except through mass production of agricultural products, which is itself dependent on desirable management of the aquiferous regions in the country and sufficient attention to the protection of soil and water.

Soil erosion in the country in 1370 [21 Mar 1991-20 Mar 1992] was estimated at 2.5 billion tons, which shows an increase of 25 percent compared to 1350 [21 Mar 1971-20 Mar 1972]. This increase and growth of excessive destruction shows lack of sufficient attention to this important matter.

Preparing comprehensive aquiferous plans in various areas; selecting model areas to show the results of aquifer management to attract the participation of the people; preparing plans for the distribution of flood waters; building earthen dams and coastal flood walls; implementing biological plans, such as planting saplings, sowing seeds, and protecting pastures; and implementing educational, developmental, and output research projects seem necessary in this connection.

According to a correspondent of IRNA, Engineer Matlabi, the head of aquifer management of the Construction Jihad of the province of Khorasan, said in this connection: "In order to provide food for the increasing population of this province, in 1375 [21 Mar 1996-20 Mar 1997] we will need more than 1.2 million hectares of agricultural land. Therefore, the need to protect the soil is clear enough."

He also added: "The aquifer management committee of the Jihad of Khorasan Province began its studies in mid-1370 [1991] and at the present is active in 21 cities of this province."

He added: "The implementation studies of the Chaharsad area of the city of Gonabad, which is 14,000 hectares, have been completed and will be implemented in 1372 [21 Mar 1993-20 Mar 1994]."

This year, due to flooding, more than 110,000 hectares of agricultural land in Khorasan Province and dozens of qanats were destroyed, inflicting billions of rials in damages.

### State of Persian Gulf Pollution Viewed

92WN0692A Tehran ABRAR in Persian 5 Jul 92 p 9

[Text] IRNA—It appears that among all of the nation's cities, Bushehr has the most deplorable sewage backup situation. Every day more than three [as published] cubic meters of piped water comes into this peninsula without any place to empty it after it is used.

The high level of the water table, its continuous increase, the unfavorable topography, the lack of natural slopes, the relative impermeability of the soil, insufficient evaporation, and other things are some of the environmental problems in the province of Bushehr.

The procedure for collecting and disposing of refuse is defective, primitive, and controversial in all the cities of the province of Bushehr. One of the factors in the profusion of litter and environmental pollution is releasing livestock to wander in the streets and alleys of the city.

On the one hand the lack of sufficient information among the classes of society concerning environmental issues and consequently their failure to cooperate effectively with the municipalities have caused environmental pollution and disorder. The municipalities of the province are also suffering from a shortage of equipment and manpower. It is seen in many places that drainage from washing clothing and dishes runs into the alleys, yet families show great sensitivity in keeping their homes clean, so that their living spaces are kept clear of the slightest bit of rubbish. Along the sea and in various public places, however, garbage and surplus items are seen littered here and there. The faintest odor of shrimp or fish is difficult to endure in homes, but the surplus parts of these food items are carelessly thrown into the streets and alleys, or outside of homes in the cities.

Unwelcome and foul-smelling waste and drainage thrown out of homes remains in the neighborhood in the form of sewage, and this is one of the most important breeding grounds for various kinds of disease-carrying animals such as rats, mosquitos, flies and other things.

### Characteristics of Wild Seaside Trees

The characteristics of wild seaside trees, of which there is considered to be a rich variety in this province, can be called a great natural research laboratory. A forest of [hera] trees, with their roots in the water, is quite beautiful and attractive, and they must be protected, because this is the best place for the breeding of migrant birds.

The protected area of Haleh Pond, in the northwest part of Bushehr, is also a wildlife haven, especially for migrant birds.

This pond is beside the Persian Gulf, and it plays a very effective role in changing the climate and sharply reducing the heat. Experts consider it a model environment with great value.

The birds in this area include pelicans, flamingos, [ocean redbills], herons, various ducks, geese, cranes, and hunting birds.

One of the complaints of the native people with regard to the prohibitions on capturing hunting birds is that hunting falcons, which are internationally protected birds, have a long tradition of being sold to the emirates on the other side of the Persian Gulf, and this is practiced in some families as a hereditary profession.

Unfortunately, however, the local people who are engaged in this calling impose the heavy costs of controlling it on the government every year.

In reality, the presence of hunting falcons is the best way of fighting desert rats and birds who do irreparable damage to wheat fields. The reduction in the numbers of hunting falcons has caused uncontrollable increases in these animals, and the local residents seeking profits have unwittingly done the greatest damage to the region's agriculture.

### Persian Gulf and Environmental Pollution

The mixture of oil with the waters in the seas and oceans has become an international problem today, and its importance and sensitivity becomes greater every day.

With regard to oil spills, the open waters of the Persian Gulf may include some of the most polluted areas.

The natural and geographic situation of the Persian Gulf is such that it is extremely sensitive to damage and impurities compared to other oceans, and the results are quickly evident in the various forms of marine life.

Unfortunately the Persian Gulf war exposed a wide radius of the Gulf to oil pollution and a large number of marine animals and aquatic birds were destroyed.

The economic, social, and political importance of the the Persian Gulf is exceptionally great. For this reason, following the effects of pollution in the area and because of the necessity to protect this unique body of water, the nations on its shores began seeking solutions, and to unify research, supervisory and control activities, they formed a body they presented to the world as the Kuwait Convention.

This body, of which the Islamic Republic of Iran is also a member, operates under the supervision of the UN Environmental Protection Program, and its duties in general are to monitor pollution and protect the Persian Gulf environment.

In addition to maritime oil shipping, another source of the pollution in the Persian Gulf is the heedlessness of ship and launch owners in dumping burnt motor oil into the water.

Other factors in Persian Gulf are considered to be the dumping of oil products, the emptying of garbage, dumping rotted materials, and also repairing corroded ship hulls.

The sea coasts are among the best recreational areas, and pleasant natural touring areas; seeing them has very useful psychological and spiritual effects for people weary of the world of smoke and machines.

The coasts of the Persian Gulf have long been attractive to tourists and travelers from all over the world.

Keeping this coastal border strip clean and keeping the environment of those living in the south of the country in good health are of extraordinary importance, and not that much attention is being paid to this.

#### **New Lead, Zinc Complex Commissioned**

*LD1608133592 Tehran Voice of the Islamic Republic of Iran First Program Network in Persian 0930 GMT 16 Aug 92*

[Text] The massive Iran lead factory [Karkhan-e Sorb-e Iran] and parts of the huge Iranian lead and zinc complex became operational in Zanjan this morning during ceremonies in the presence of President Hashemi-Rafsanjani. According to the Central News Unit, the factory is one of the largest industrial units in Iran and the Middle East. The design and construction of the factory took three years to complete on 550 hectares of land. Annually, the factory will produce 40,000 tons of pure zinc, 12 tons of silver, and 1,000 tons of hard lead, among other things. It was constructed at a cost of 36 billion rials, of which 100 million German marks is in the form of foreign currency.

In this huge complex, apart from the lead factory, a large and modern pure oxygen factory with a capacity of 2,500 cubic meters per hour has been installed and commissioned. It will supply the required oxygen for the lead factory and the oxygen required by other production units of the region. It will also provide part of the country's requirement of Argon gas, which is currently imported.

Further, in order to protect the environment and prevent pollution, the lead factory and the lead and zinc complex have been supplied with the most advanced and environmentally friendly equipment and systems. They were purchased and installed at a cost of over 10 million German marks and 5 billion rials.

While visiting the various parts of this huge production unit, the president, during an interview, pointed out the importance of the commissioning of the complex. He said: The commissioning of the Iran lead factory was one of our fundamental tasks since there are many lead

mines in the country. The country needs 50,000 tons of lead. Hitherto it was imported. The president said: Iran is rich in lead and zinc. It can export these strategic commodities which bring a high return. Mr. Hashemi-Rafsanjani stressed: We would like to see the mobilization and commissioning of the next phase of the complex, which will produce around 60,000 tons of zinc. We must make it operational as soon as possible because it will bring in a good return. The president announced: Apart from the installation of equipment over the past two years, 150,000 square meters of buildings were constructed in the lead and zinc complex. He congratulated the engineers, experts, and workers at the complex.

### **IRAQ**

#### **Dam on Euphrates To Cut Water From South**

*NC1308150892 (Clandestine) Voice of the Iraqi People in Arabic 1400 GMT 13 Aug 92*

[Text] Tyrant Saddam Husayn's authorities have established a dam on the Euphrates River in the Suq al-Shuyukh district of al-Nasiriyah Governorate to divert the river and cut off water from marshlands residents. Informed sources said the outcast regime used equipment worth billions of dollars belonging to foreign companies, which the regime stole after the Gulf war erupted. Many foreign companies earlier demanded that tyrant Saddam Husayn's regime pay compensation for the equipment.

### **ISRAEL**

#### **Nature Protection Society Responds to Minister's VOA Stance**

*TA2508045292 Jerusalem Qol Yisra'el in Hebrew 0400 GMT 25 Aug 92*

[Text] If it transpires that the establishment of the VOA relay station may harm the millions of migratory birds flying over the 'Arava, the government will reconvene for a renewed discussion about the establishment of the station. This was stated by Environment Minister Ora Namir. The findings of the migratory birds survey will be submitted within two months, and the dangers, if any, will become apparent. Nevertheless, all objections other than the problem of the birds are off the agenda, and the station will go up indeed.

The Society for the Preservation of Nature has rejected the environment minister's position, saying that the problems resulting from the severe damage to the environment involved in the IDF [Israel Defense Forces] firing range have not been solved yet. The Society for the Preservation of Nature does not believe the station is economically profitable either. Yo'av Sagi, the head of the society, says that Israel is caught: While the conclusion emerging in the United States is that the 'Arava project is unnecessary, the Israeli Government is continuing the establishment procedures, adhering to the outdated agreement. He also fears that pressure will be

applied to the National Construction and Planning Council, which will prevent it from reaching an independent decision.

## UNITED ARAB EMIRATES

### Japan To Assist Emirates in Underground Water Resource Development

92WN0643A London AL-HAYAH in Arabic 15 Jun 92  
p 10

[Article by Shafik al-Assady]

[Text] Abu Dhabi—Japan has announced that it might build underground dams in the Emirates to enhance water resources and conserve underground springs and streams in that country.

Yushiro Nakayama, president of the Japanese-Emirates Friendship Society, said that he had discussed details of Japanese aid to the Emirates for developing underground water resources during his meeting in Dubai with Shaykh Zayid bin Sultan, president of the Emirates.

He indicated that Shaykh Zayid and Japanese Minister of International Trade and Industry Kozo Wanatabe had agreed that Japan would conduct the studies needed to implement this important and vital project for the Emirates. The agreement took place during Wanatabe's visit to Abu Dhabi last January.

Nakayama confirmed that two groups of Japanese consultants had visited Abu Dhabi last February and May to collect data from oil companies and relevant government agencies on the amount of rain and underground water. They also performed field surveys of nine geological areas. He said: "The data and information will be analyzed, and a team of experts will prepare a preliminary report on underground water in the Emirates. The report will be presented in September to Shaykh Zayid for ratification."

Nakayama announced that the Japanese government would finance the studies of the modernization and development of underground water resources. The Abu

Dhabi Oil Company Limited (ADOC) would provide the manpower and technical expertise needed to complete the studies for this project.

Nakayama, who also holds the positions of top consultant to ADOC and chairman of the board of the Japanese oil company Cosmo, added that a schedule must be put in place for this huge project. He insisted that Shaykh Zayid was very interested in this matter and had told him that the Emirates were very rich in sunshine and land, but that its people were in great need of water. The Shaykh had asked him to present this matter to the Japanese government. Thus, Nakayama had briefed the Japanese minister of international trade and industry before the latter's trip to Abu Dhabi as part of his tour of the region, which also took him to Saudi Arabia, Kuwait and the Sultanate of Oman.

Nakayama said: "The Japanese government has given great importance to this matter in light of its efforts to provide technology and technical expertise to the Emirates, which is Japan's leading source of oil."

It should be noted that Japan offers technical assistance to the Emirates in the fields of solar energy, development of marine resources and fresh-water fisheries. It has an important fisheries center in the emirate of Umm Al-Qaywayn.

The Emirates, together with an American organization dealing with underground water, is also implementing an important project for underground water development in Al-'Ayn, the second largest city in the emirate of Abu Dhabi, located in the 'empty quarter.' The Al-'Ayn region is recognized for its many springs and green oases, primary among which is Al-'Ayn Al-Faydah [the Overflowing Eye], which has become a major tourist attraction in the Emirates.

Nakayama stressed that the Japanese government is very interested in continuing its oil relations with the Emirates and expects Abu Dhabi to remain Japan's main source of oil during the coming years. Japan's oil exports from Abu Dhabi greatly increased after Kuwait and Iraq's exports of crude oil stopped in August 1990.

Nakayama said that Shaykh Zayid's visit to Tokyo in August 1990 had reinforced cooperation efforts between the two countries and strengthened the friendship between the Emirates and Japan.

## RUSSIA

**Yeltsin Aide on U.S. Help in CW Destruction**

*PM0508084992 Moscow IZVESTIYA in Russian  
31 Jul 92 Morning Edition p 6*

[Viktor Litovkin report: "Americans Will Pay for Destruction of Chemical Weapons in Russia"]

[Text] Anatoliy Kuntsevich, chairman of the Committee for Conventional Problems of Chemical and Biological Weapons under the Russian president, and Donald Atwood, U.S. deputy defense secretary, signed an agreement on the secure, reliable, and environmentally clean destruction of chemical weapons in our country.

Russia needs to spend 100 billion rubles to get rid of the 40,000 tons of these lethal weapons. The U.S. Government has decided to allocate us during the initial phase \$25 million of the \$400 million that the United States is willing to spend to help our country eliminate all kinds of mass-destruction weapons.

But this is no act of charity. Specialists think that in adopting this decision, the U.S. Congress was primarily acting in the interests of its own national security, rightly thinking that if mass-destruction weapons are eliminated somewhere, they will never threaten the lives of U.S. citizens.

"Another fundamental idea behind this Congress decision," Academician Kuntsevich said during a conversation with your IZVESTIYA commentator, "was that Russia is indeed in a difficult economic position and cannot raise this problem without real outside aid."

However, the chairman of the conventional committee said, everyone is perfectly well aware that however great and timely the aid, it will not replace Russian spending and efforts to destroy the stocks of chemical agents, although it will be a major incentive for it to organize the work and transform existing projects into concrete real actions.

Moreover, the money allocated by the U.S. Administration will not enter Russia's economy in the form of long-term loans or deposits and will not be spent on other purposes. The agreement between the two countries envisages that the chemical disarmament process in our country will be funded via a U.S. firm that will win a tender for this work.

According to Anatoliy Kuntsevich, the firm will take part in formulating a concept for the destruction of chemical weapons and preparing and analyzing tenders for our installations, it will recruit experts to assess them and also supply reliable high-tech equipment—reactors, furnaces for incinerating munitions, containment structures [zapornaya armatura], automated systems, measuring equipment, and apparatus enabling effective checks to be carried out, including on the environment. This apparatus only exists in the United States.

Russian specialists will also be involved in choosing this firm. The agreement also envisages that our scientists and experts will work with the Americans during all phases involved in formulating and implementing the plans for the destruction and salvaging of chemical weapons. The projects themselves will be the incarnation of all our countries' best and most effective achievements in this field.

Provision has been made for a special center to be set up based on the Russian conventional committee to exercise national and international supervision of the chemical weapons destruction process. Our specialists hope to recruit not only U.S. but also European firms to take part in the program for the chemical demilitarization of Russia, in particular to create comfortable population centers and social facilities in line with high international standards in terms of living conditions.

"We think," Academician Kuntsevich told your IZVESTIYA commentator, "that highly developed countries can help Russia in destroying and salvaging chemical weapons in highly varied areas, including meeting the needs of the local population and personnel working at the installations eliminating the toxic chemical agents as far as improving their living and working conditions is concerned."

What will the first \$25 million in U.S. aid be used for? According to the chairman of the conventional committee, it will be used to assess the possibilities of reorienting a chemical plant that was at one time engaged in producing chemical agents to destroying these agents and also to conduct expert analysis of the largest chemical weapons stocks—lewisite and mustard gas. They were formed back in the forties and present the greatest environmental concern today.

Kuntsevich thinks that these toxic chemical agents should be destroyed on site.

The academician thinks that the projects prepared for international tender accord with the highest requirements of absolute reliability, guaranteed security, and environmental cleanliness. Admittedly, they will also be comprehensively evaluated not only by international experts, but also by the population of those areas where it is planned to build the installations to destroy the toxic chemical agents, and will only accepted for implementation with their consent.

Incidentally, President Boris Yeltsin recently published a special ordinance on priority measures to prepare to implement Russia's international pledges in the sphere of destroying chemical weapons stocks, an ordinance which makes provision for a whole series of specific measures and concessions with regard to developing the social infrastructure, improving material and social provisioning for workers and the population of areas where the installations destroying the toxic chemical agents are sited, and ensuring priority supplies of food and industrial commodities for them.



When will the Russian-U.S. agreement start producing a real return? After a competition has been held in the United States to find the firm to whom to entrust cooperation with Russia's conventional committee.

According to Anatoliy Kuntsevich, this work will take several months under U.S. legal norms and regulations. Then the plans will be studied, the best one will be established, and experimental design work carried out—that will take roughly a year. It will take another year to organize the full-scale process for destroying one of the most dangerous kinds of mass-destruction weapons. So, 1995 may see the launch of the program.

We are in no hurry," Anatoliy Kuntsevich said before flying off to Washington. "The main thing is to start the process of ridding mankind of lethal weapons. One of the main priorities should be to ensure not only that our people are absolutely secure, but also that the population, the natural environment, and ecology of other countries are too. That is the crux and purpose of Russian-U.S. cooperation."

#### **Commentary Praises Agreement on Stockpiled Chemical Weapons**

*LD3107223092 Moscow Radio Moscow World Service in English 1710 GMT 31 Jul 92*

[Vladislav Kozyakov commentary]

[Text] Russia and the United States signed a cooperation agreement in Washington on Thursday to destroy the existing stockpile of chemical weapons. Commentary by Vladislav Kozyakov:

The deal follows an agreement that Moscow and Washington signed two years ago on halting production and eliminating existing chemical stockpiles. Work is due to be finalized later next month on an international chemical ban which may come into force already next year. Under yesterday's deal struck at the Defense Department, the United States will help Russia destroy its chemical stockpile by allocating \$25 million to this end.

The appropriate contract will be awarded to an American firm on a competitive basis. Such a company is expected to come up with projects for the weapons' destruction, including a feasibility plan of reconvertng a Russian chemical plant engaged in the manufacture of toxic agents into a weapons construction [as heard] facility.

One of the overriding priorities is to determine how to dispose best of large stocks of toxic agents such as lewisite and mustard gas, causing most concern by the environmentalists. Much of these was produced back in the 1940's and has to be destroyed locally.

The American company is also expected to supply incinerators, automation, and the equipment for monitoring the process of destruction and the state of the environment.

A Russian official, Anatoliy Kuntsevich, who signed the Washington deal on behalf of this country, says that the United States is the only country possessing such equipment. Russian and U.S. experts will work together at all stages of the weapons destruction, and a team of Russian specialists is due to visit U.S. installations to watch the process there.

The agreement is part of the Russian Government's program for the elimination of chemical weapons, with parliament instructing the cabinet to submit its draft by 15 September. Russian legislators approved a resolution speaking of the need to prepare laws and earmarked funds to meet the country's obligations for the destruction of chemical weapons. Russia faces a daunting job of getting rid of a total 40 million tons of toxic agents at the cost of 100 billion rubles or \$800 million at the current exchange rate. Although the U.S. aid looks too small, it can certainly be of help to the ailing Russian economy. More importantly, the two countries once again join forces in one another's practical venture to the benefit of mankind.

The destruction of the existing stockpile of chemical weapons is the best guarantee that neither the Russians nor the Americans nor the people of other countries will ever face the nightmare of troubles linked with the use or storage of this barbaric type of weapons.

#### **Kemerovo Leader Wants 1984 Nuclear Tests Claim Checked**

*PM0708143992 Moscow Teleradiokompaniya Ostankino Television First Program Network in Russian 2000 GMT 5 Aug 92*

[From the "Novosti" newscast: Video report by M. Maksimovskaya, identified by caption]

[Text] [Video shows aerial shot of forests] [Maksimovskaya] Kemerovo Oblast Soviet Chairman Tuleyev has sent a cable to the Russian leadership asking them to check whether there were atomic explosions in the Kuzbass. According to his information nuclear tests were carried out in northern Kemerovo Oblast in 1984—needless to say, in total secrecy. However, it did not prove possible to keep secret the radioactive fallout that hit the Kuzbass following the tests. ITAR-TASS reports that the oblast's leadership is asking for an objective investigation to find out how serious the radiation situation is in the region. [Video shows archive footage of an explosion followed by a ground shot of the forest].

#### **Federal Ecological Fund Enshrined in Legislation**

*PM0408130992 Moscow ROSSIYSKAYA GAZETA in Russian 30 Jul 92 First Edition p 1*

[Unattributed report: "Federal Ecological Fund"]

[Text] The Law "On Protecting the Natural Environment" adopted last December presupposed the establishment of a unified system of extrabudgetary state

ecological funds pooling federal and similar regional funds. Under the law, the government has adopted a resolution on forming a Russian Federation Federal Ecological Fund.

Its tasks include the financing and provision of loans for federal programs and scientific and technical projects designed to improve the quality of the natural environment, and also to ensure the environmental safety of the population, mobilize resources to implement nature conservation measures and programs, and introduce environmentally clean technologies.

### Readers Attest to Chemical Weapons Dumping in Northern Seas

92WN0695A Moscow *RABOCHAYA TRIBUNA*  
in Russian 31 Jul 92 p 8

[Article by RABOCHAYA TRIBUNA military observer Sergey Doronin: "A Sea of Delayed Action"]

[Text] *Chemical weapons have been dumped not only in the Baltic. The seas of the Russian North have also suffered from thoughtless actions.*

After the first articles about the fate of the captured German chemical weapons (10 and 24 April of this year) in *RABOCHAYA TRIBUNA* there were many responses from readers, including testimonies from witnesses. Unfortunately, the majority of them are lacking the main thing—preciseness about dates, the quantity of sunken cargo, its character, and the coordinates. But still there is no doubt about their value: Eyewitnesses are making new locations known. And the main thing is that they confirm the assumption that it was not just products from chemical plants of Hitler's Germany that were sent "on the quiet" to the bottom of the sea.

Proof of this comes in a letter from Dagestan from long-distance navigator Lev Vitalyevich Vasilyev:

"In August 1960 when I was a cadet of the Murmansk Navigation School taking practical training on the steamship *Kashira*, I had occasion to participate in one such (now I understand what kind: questionable!) operation for burying chemical ammunition. Two other steamships registered in Arkhangelsk were working with the *Kashira*.

"The steamships completed three trips each and threw over their cargo, it seems, northwest of Novaya Zemlya..."

Notice the geography and dates of the case Vasilyev described: August 1960, the Kola Peninsula. It is not very likely that these chemical munitions were captured. Whose were they then? Were they really ours? The mystery might have remained a mystery were it not for Murmansk resident Viktor Ivanovich Breslavets:

"The story Vasilyev told is just an episode, and one of the final ones. In the North they began to dump chemical weapons earlier, sometime in the middle of the fifties...

"But first about what I myself witnessed. In the summer of 1955 a large batch of chemical artillery charges was delivered to our 178th Artillery Regiment where I was serving as the senior battery officer. The order was to fire off every one right down to the last. We, being younger, thought nothing of it. But the front-line troops... They expressed doubts: The charges, which were filled with prussic acid, were manufactured in 1914-1915. They were Russian from the supplies from World War I.

"There was nothing we could do so we set out for the firing ground, from which, as they say, you could reach with your hand to the Norwegian border. Shelters had already been prepared for us there. Not simply dugouts but hermetically sealed shelters.

"Through my hands passed 290 charges, one after another: I turned the firing mechanism in each of them. The orders were that only the senior battery officer could prepare the munitions.

"They say that with time chemical weapons lose their toxifying properties. That may be true, but these, which were 40 years old, worked perfectly. In any case the animals in the areas where the charges fell died of prussic acid poisoning. And the smoke from the explosions—it drifted in the direction of Norway...

"The munitions were delivered to the docks at Trifonov Ruchey (south of Linikhamara) by transportation from the 106th Automotive Battalion.

"The charges and mines were loaded in boxes, and the aircraft bombs—in crates. And that is how they were thrown overboard, without being unpacked, frequently while on the move. Vasilyev made a mistake in his determination of the place where they were dumped. The sea to the southwest of Novaya Zemlya is largely shallow and, moreover, ice is frequently found there in the summer. I do not think the captain of the *Kashira* would risk going there.

"I will not attempt to figure out how much ammunition was destroyed in this manner. Nor will I try to establish which toxic substances they were filled with..."

In a conversation with President of Finland Mauno Koivisto, Boris Yeltsin noted that problems of the ecology of the Baltic Sea and the search for captured chemical weapons which were dumped during 1945-1947 disturbed the Russians. The president emphasized that we were prepared for extensive international cooperation in this area.

Well, a sensible position, our country has had enough of being a monster whose ecological carelessness causes not only itself but also neighboring states to suffer. The truth is that we cannot deal with this matter without financial, material, and scientific aid from abroad. And we have a right to count on it, but in the future.

This summer the St. Petersburg Okeanotekhnika Association planned to do a comprehensive study of one of the places where the captured chemical weapons were

buried in the Baltic. It did not work out. In the first place, the money was not found. In the second place, there were those who had their doubts: It was dangerous to disturb charges, aerial bombs, mines, and containers of toxic substances that had been lying in sea water for decades. But this is not a matter of "disturbing" anything. It is important to determine the burial places and the condition of the weapons, and with the help of the latest technologies to investigate the bottom layers of water and soil and the marine flora and fauna to discover if there are toxins in them. Perhaps in the future the work will really have to be limited to ecological monitoring alone.

But an attempt must be made. And not only in the Baltic, since the former Union engaged in secret burials of chemical agents in the Russian North as well.

#### **Inspection of Baltic Sea Chemical Weapons Burial Places Postponed**

*LD1708180392 Moscow ITAR-TASS in English  
1204 GMT 17 Aug 92*

[By ITAR-TASS correspondent Nikolay Krupennik]

[Text] St. Petersburg August 17 TASS—A scientific expedition to examine burial places of chemical weapons in the Baltic Sea scheduled for this summer was postponed till 1993, TASS learned from the St. Petersburg-based "Okeanotekhnika" Association on Monday.

The association was established on the basis of the St. Petersburg technical university and incorporates over 40 major scientific and industrial organisations engaged in a practical solution of the Russian "Ecobaros" ecological programme.

The scientific expedition to examine post-war burial places of poisonous substances in the Baltic Sea had been approved by the Russian Government and the necessary funds had been allocated for the purpose. Nevertheless, the expedition had failed to set out in July and the "Ecobaros" project was postponed until next summer.

Commenting on the situation, the organisers of the expedition said that problems connected with the exposure of burial places affect vital interests of 30 million people living in the Baltic region.

Before taking concrete steps, it is necessary to find out the position taken by the Baltic countries, the United States, Great Britain and Germany.

An international conference on the problem attended by all countries concerned is expected to be convened in September to work out a further strategy of scientific research.

#### **Feasibility of Phasing Out Chernobyl-Style Reactors Questioned**

*92WN0689C Moscow MOSCOW NEWS in English  
No 28, 12-19 Jul 92 p 11*

[Article by Leonard Nikishin, MN analyst: "Greenpeace: Payment in Advance"]

[Text] The Chernobyl disaster questioned the further existence of nuclear reactors generating such danger. Despite this, the notorious RBMK [high-power fuel-channel-type boiling] reactors are still running, although the slightest malfunction makes millions of people shudder.

The international Greenpeace organization has been trying to solve the problem of these reactors for some time, with the aim of closing them down. But until now all such attacks have been resisted. Easier said than done: just imagine putting a dozen reactors out of action. How can we solve our energy problems? The country has practically no energy reserves and the approach of the cold season always spells trouble.

Russian nuclear experts assure people that appropriate measures have been taken, the RBMK reactors have been improved and there will be no repetition of Chernobyl. But these assurances are not convincing. Everyone knows about the "triumphal" realities our social life was so renowned for. They would prefer 100 percent guarantees.

Greenpeace recently announced its first victory: the round-table conference arranged last week by the Supreme Soviet Committee for Industry and Power Engineering was a success. At any rate, it was announced at the press conference that Mr. Kalistratov, Vice-Chairman of the Committee, agreed that the Greenpeace ideas were feasible both technically and economically and that it would be possible to shut down the RBMK reactors in the near future. Spokesmen for the President's advisor on ecology, the Ministry of Ecology and independent Russian experts agreed that the nuclear-free policy of effective use of energy and the new methods of gas and energy production can compensate the loss of power capacities connected with the closure of RBMK reactors. This acknowledgment is a turning point in Russia's policies.

The head of the Ministry of Atomic Energy press centre poured cold water on the heated discussions: "All this is very interesting, but does it mean that Russia has already agreed to accept the Greenpeace programme? Of course we talked, debated... Experts expressed varying opinions. But no one has proved yet that RBMK reactors are dangerous. At any rate the International Atomic Energy Agency (IAEA) does not think so. The government of Russia will study alternative approaches but take the most economical road."

Although Greenpeace champions noted reasonably that the safety of nuclear reactors is not so much an economic

as an ethical problem (it is society and not technical experts that decides the degree of risk for life), it is all the same clear that their joy was a little premature. This organization accustomed to Western politicians paying attention to its statements and actions has overrated the auditory capabilities of our government structures. The alternative of Greenpeace to RBMK reactors is a more efficient use of energy and the development of new energy production methods compensating for power losses with Western technical and financial assistance. At the press conference I asked what this means in practice.

Firstly, experts say, demand for energy in the CIS countries will be reduced by ten per cent in the next five years. Secondly, the lessening of energy losses and the introduction of power saving technologies will help save 35-40 per cent of energy in the next 10-15 years. Thirdly, the introduction of highly-effective plants generating heat and energy on the basis of natural gas and the development of small-scale reusable sources of energy.

They have little understanding of us... The country where street lamps are lit long past dawn and where trucks on parking lots belch out exhaust fumes for hours on end will hardly change its habits in the near future. We have heard so many times about "the introduction of highly effective power-saving technologies in the next few years" that it is clear even without the experts that the result of this effort will most likely be the same as that of today's economic reforms. But if we get financial support and new technologies we can start discussions. Again the method of "advance payment:" first the commissioning of gas-turbine plants and only then the closure of RBMK reactors. But so far there are no real joint programmes with the West in this direction. "Why haven't you requested money from the European Bank for Reconstruction and Development (EBRD)," they asked. "They would certainly provide financial help for this."

Well, we can reply that we have already forgotten how to drive fast, and it still takes us quite a time to harness the horses...

#### **Mikhaylov Dismisses Report of Chernobyl Sarcophagus 'Cracks'**

*LD0608214892 Moscow Teleradiokompaniya  
Ostankino Television First Program Network  
in Russian 1700 GMT 6 Aug 92*

[From the "Novosti" newscast]

[Text] Nearly everyone was staggered by the INTERFAX report that the sarcophagus covering the Chernobyl reactor is disintegrating. Shcherbina, director of the installation covering the Chernobyl station, commenting on the unpredictability of the situation, pointed to the danger of another accident.

In this connection we today contacted Russian Nuclear Energy Minister Viktor Mikhaylov. He stated that he

does not believe such information, and said that Ukraine would appeal to Russia with an official request for the joint investigation of the sarcophagus, should the situation warrant: Such agreement does exist. However, no request from Ukraine has so far been made to the Main Department for Nuclear Power [Glavatom]. According to Glavatom specialists' reports, radiation emissions from the cracks in the sarcophagus are within normal levels.

#### **State Commission Assesses Nuclear Power Station Project**

*LD3107215492 Moscow Teleradiokompaniya  
Ostankino Television First Program Network  
in Russian 1700 GMT 31 Jul 92*

[Video report by S. Sergeyev from Chelyabinsk oblast—from the "Novosti" newscast]

[Text] This is how the construction site of the Yuzhno-Uralsk nuclear electric power station [AES] looks today. Tall weeds everywhere and foundation ditches for the first and second power generating units are filled with water. We did not see a single worker or a single construction mechanism, therefore, rumors about reanimating a frozen nuclear installation turned out to be only rumors and the truth is as follows: A regular authoritative commission of experts, set up by the Russian Economics Ministry, has finished its work and reached a conclusion on the station project.

[V.I. Fetisov, director, "Mayak" Industrial Association, and Russian people's deputy] According to state experts, there are no obstacles to the construction of the Yuzhno-Uralsk nuclear station at present. The commission of experts noted that the decision to use a fast neutron reactor was very successful and that new prospects on the implementation of a closed nuclear fuel cycle are opened here, but to build or not to build the nuclear station—the decision should be made by the Russian Government, certainly, with the participation of the oblast soviet. [Video shows construction site, Fetisov being interviewed]

#### **Russia Seeks Western Help To Deal With Kola Reactor Waste**

*LD0608071792 Helsinki Suomen Yleisradio Network  
in Finnish 1500 GMT 5 Aug 92*

[Text] Russia hopes for aid from Western companies to deal with radioactive waste in the Kola peninsula. There is much radioactive waste in Kola, including waste from nuclear-powered vessels. Norwegian authorities were told recently that reactors have been sunk into the Barents Sea and that there is a danger of the radioactive fuel leaking into the sea from these reactors. The Russians are now asking the Norwegian Fridtjof Nansen Institute to help establish links with Western enterprises. Ulla-Maria Johansen reports from Oslo:

[Johansen] A scientist at the Fridtjof Nansen Institute, (Rune Kastberg), says that the management of the Severodvinsk shipyard in Archangelsk has turned to the Fridtjof Nansen Institute and asked it to mediate contacts with Western companies. The Russian authorities hope for cooperation with Western companies in the management of their great problems with radioactive waste. This especially concerns nuclear-powered submarines and other warships in the Kola peninsula, which have been taken out of use and which are rusting and endangering the environment. The environmental problems caused by radioactive waste are increasing all the time. The existing Russian institutions cannot manage them alone, says (Rune Kastberg). From Western companies Russia hopes to get know-how and investments, not so much technology, says (Kastberg).

According to the latest reports, reactors from submarines and nuclear-powered icebreakers were thrown straight into the sea off Novaya Zemlya in the 1980's. The Russian authorities have confirmed to the Norwegian Nuclear Inspection Institute reports saying that 12 nuclear reactors were thrown into the sea off Novaya Zemlya in the period from the 1960's to 1982. Earlier, Russian authorities partially confirmed allegations according to which radioactive waste was irresponsibly stored in the Kola Peninsula both on board vessels in ports and on land.

#### **Norway To Aid Safety Modifications at Kola Nuclear Station**

*PM1808140192 Moscow PRAVDA in Russian  
18 Aug 92 p 1*

[Report by Aleksandr Khramtsov: "Norwegians Nearer, Therefore Kinder"]

[Text] While the "Big Seven" and the IMF think about whether to give Russia the promised billions, the Norwegian government has allocated 20 million kroner from the state budget for the joint project to improve radiation and nuclear safety at the Kola nuclear power station.

#### **Military Bars Finnish Research Ship From Lake Ladoga**

*92WN0712A Moscow IZVESTIYA in Russian 8 Aug 92  
Morning Edition p 6*

[Report by Marat Zubko, IZVESTIYA, Helsinki: "The Stalinist Instruction Remains in Effect; The Reason for Which a Finnish Scientific Vessel Was Barred From Ladoga"]

[Text] New Russia remains governed by the laws of Stalinist times. This was recently proven by Russian military authorities with their decision on allowing the sailing of the Finnish scientific ship Munkku in Lake Ladoga. Referring to a 1952 instruction which prohibited the navigation of foreign vessels in internal USSR waters, their verdict was: "Refused!"

This decision puzzled the Finnish authorities and public. It was actively criticized by the local press. It is a question of a joint Russian-Finnish scientific expedition to study the possibility of treating the waters of Lake Ladoga. The interest of the Finns in this case is that the water from this lake flows through the Neva into the Gulf of Finland, which borders Suomi.

Timo Myakelya, chief of the Eastern European program in the Finnish Ministry of Environmental Protection, told me that the official appeal to Russian authorities with a request to allow the Munkku to sail into Ladoga had been sent some four months ago. In Moscow, the Russian minister of foreign affairs told the Finnish ambassador, according to one of the local newspapers, that everything was in order. Nonetheless, no answer was received. At that point, the Finns investigated and determined that permission was refused. The reason for the refusal was that same 1952 instruction. To the Finns this prohibition looked rather strange also because a number of Russian vessels are sailing internal Finnish waterways.

Is the military indeed fearing the revelation of its secrets? In any case, the Munkku is a strictly scientific ship. The Finns are even prepared to offer Russian experts the possibility of seeing this for themselves. As to whether military secrets may exist in the Ladoga area, given present tracking facilities, my interlocutor reminded me, such secrets have long become known.

Incidentally, Russian vessels have already undertaken the implementation of the program. However, it is precisely the Finnish vessel that carries the equipment which so far the Russians lack. Such equipment makes it possible to determine the existence of various organic matter in the water, the presence of heavy metals, and to identify even the slightest current.

"Now," said my interlocutor in conclusion, "a number of rumors are making the rounds about Ladoga and the extent of the pollution of its waters. Russian and Karelian scientists have done a great deal of work to study the environment of the lake. However, this also needs new joint studies. We hope that our expedition, which should include 15 Finnish scientists, will eventually be granted permission to work in Lake Ladoga...."

What can we add to this? Naturally, under the Soviet system so many laws, decrees, and instructions have been passed that it is difficult to revise all of them immediately. Nonetheless, since we have a request filed by a neighboring country to assist in a project which is useful to Russia as well, should the authorities not think about how to act: on the basis of 40-year old instructions or despite them?

### **Dismantling of Nuclear Subs Would Imperil Severodvinsk Environment**

92WN0689B Moscow MOSCOW NEWS in English  
No 28, 12-19 Jul 92 p 11

[Article by Lyudmila Zhukova, Severodvinsk: "We All Live Off a Yellow Submarine"]

[Text] The situation in Severodvinsk following a presidential visit there.

An excerpt from Severodvinsk mayor, V. Lyskov's memorandum for the Russian Federation government:

"There are over 50 nuclear reactors on board submarines berthed inside the city, with the aggregate amount of radioactive materials 20 times greater than that in the crippled unit of the Chernobyl NPP. Over 1,000 potentially dangerous nuclear-related jobs—including the replacement of nuclear fuel in the submarines' reactors and putting the reactors in operation which creates a particularly precarious situation—are done within the city limits annually. Storage of eight decommissioned nuclear-powered submarines with still loaded nuclear cores poses another major problem. Some of the subs have been laid up here since 1975, which makes the probability of an accident rather high."

All the subs with missile sections cut out and nuclear cores already past the guaranteed safety age are in custody of the White Sea Naval Base and kept in store at the port which is next door to a residential area. The commander of the base, Rear Admiral Leonid Salnikov argues that the floating workshops' capacity is too low, but the subs cannot be relocated elsewhere, since only Severodvinsk has the adequate equipment and experts for work with such subs.

In the meantime, the Northern Fleet continues to store obsolete nuclear-powered subs earmarked for recycling. The city will soon receive strategic subs of the Delta-1, Delta-2, and Delta-3 classes built in 1973-79. If the city's powerful (and Russia's only) plant code-named Zvyozdochka (starlet) capable of repairing, re-equipping and modernizing nuclear-powered submarines of all classes embarks on mass-scale carving up and utilization of the scrapped subs, this will gravely imperil the environment. According to U.S. data, carving up of a single Yankee-class sub will be accompanied by discharge into the atmosphere of 45 kilograms of manganese and chromium oxides apart from cobalt and lead.

Severodvinsk is a major builder of subs. The country's supreme naval command has always considered commissioning of every new sub a priority. Between 1967 and 1972, the Navy received 24 missile-carrying submarine strategic cruisers of the Yankee class alone. All were built at the Severny (Northern) Machine-Building Plant, at an astounding rate, unknown even in the United States.

It's time to bring a stop to it. Construction of just one nuclear-powered sub now costs four billion roubles on

average. But the admirals have grown accustomed to receiving ever new subs for their fleets. A greed for more and more toys is understandable in a five year-old child but not in statesmen.

Boris Yeltsin's visit to Severodvinsk this spring brought the focus of public attention to the problems of that city. It was decided to turn it into a national centre of nuclear-powered shipbuilding. The city was promised it would be relieved of all headaches hampering fulfillment of this ambitious plan. Nevertheless, the problems continue to pile up.

### **Norwegians Study Handling of Nuclear Waste in Murmansk**

LD1208201492 Moscow Mayak Radio Network  
in Russian 2100 GMT 12 Aug 92

[Text] A group of Norwegian scientists from the Institute of Radiation Safety and the Energy Institute and representatives of the Ministry of Environmental Affairs and the Ministry of Foreign Affairs have begun work in Murmansk. The specialists will acquaint themselves with overhauls at technological enterprises servicing the nuclear fleet and see how liquid and solid radioactive waste is dealt with there. Their work is being done in the context of preparations for the joint Russo-Norwegian expedition to investigate the Kara and Barents Seas for radioactivity.

### **Ecological, Health Impact of Novaya Zemlya Test Site Assessed**

92WN0694A Moscow KRASNAYA ZVEZDA  
in Russian 1 Aug 92 First Edition p 5

[Interview with Professor P. Ramzayev, director of the St. Petersburg Institute of Radiation Hygiene and member of the International Commission on Radiological Protection, by Colonel Oleg Falichev, KRASNAYA ZVEZDA; place and date not given: "Nuclear 'Aurora Borealis'"]

[Text] In contrast to Nevada, the Novaya Zemlya nuclear test range has already been silent for a number of years. But the problem of contamination by radioactive substances is not as pressing in America as it is in Russia. Especially in the northern territories. Why? How great is the danger today?

Our correspondent asked P. Ramzayev, director of the St. Petersburg Institute of Radiation Hygiene and member of the MKRZ [International Commission on Radiological Protection], to express his point of view on this question.

[Correspondent] Pavel Vasilyevich, as a radiologist you have devoted many years to studying the effect of radiation on people, and you have traveled throughout the entire North on official scientific assignments. Tell us first of all what is meant by living under the sign of vulnerability to radiation, even when it does not represent a real danger. What can radiation phobia lead to?

[Ramzayev] This is readily visible in the example of the Japanese who survived after the explosions in Hiroshima and Nagasaki. As a member of a group of experts of WHO [World Health Organization], I was instructed in 1976 to conduct selective checkups on the health of victims in Hiroshima. Almost all of them had one complaint or another, but perhaps the main complaint was concern about their descendants, who have been subjected to everyday unofficial discrimination as being afflicted, doomed, and inferior.

It was only 30 years later, when the greater longevity of the survivors of the explosions and the long absence in their children of hereditary damage became known, that radiation phobia began to abate. Japan, which has maintained opposition to nuclear weapons, has turned resolutely to nuclear power engineering.

The colossal stress now being experienced by millions of people who live in areas of increased risk due to the danger of radiation can lead to an increase in real illness. Most of all this arises owing to disorders in the neuropsychic system, even when such doses are negligibly small or when they are completely absent... Doses of even up to 10 rems per year are not at all threatening...

[Correspondent] Yes, but as is known, world science holds to the concept of non-threshold radiation for cancers, leukemia, and hereditary afflictions. Are we not soft-pedaling some critical points here?

[Ramzayev] No. For each rem, according to the MKRZ, out of 25,000 days of life a person can lose four to five days, on average. Nevertheless, significantly more damage is caused a person by the loss of a normal sense of well-being, without any connection to irradiation dosage. For example, if he is forced to resettle. In my estimates it costs the loss of almost one-fourth of the value of health, and, on the average, eight years of a full life. That is why keeping people informed with correct and timely information on the radiation situation in the country, including in the Far North, where about 2 million people live, assumes special significance now.

[Correspondent] What do you have in mind?

[Ramzayev] Recently, a rather reputable group of researchers, who previously did not work on the problem of radiation danger, came out in the mass media of the Far North. They are dissecting this very difficult problem so badly that one is amazed by their audacity. Materials on radiation contamination of food products in the Far North are being addressed to the Russian leadership. At the same time, radioactive contamination (which, incidentally, in the level of fallout of cesium-137 and strontium-90 is less by a factor of two than in Moscow) is being attributed entirely, of course, to nuclear explosions on Novaya Zemlya. And they see the results of the actions of this contamination in the illnesses of the local population.

You noted correctly: I have traveled a lot in the North. It has been my lot for 30 years now, with my colleagues

Troitska, Miretskiy, Ibatulin, and others from the St. Petersburg Institute of Radiation Hygiene, to monitor the radiation situation from Chukotsk to the Kola Peninsula continuously and independently of the military. During this time many thousands of different measurements were made and samples were taken of the environment and people's bodies, their secretions, and dissectional tissues. Analysis, of course, was conducted on the effects of radiation on reindeer, not counting experiments on thousands of rodents. The results of these analyses received the support of scientists of other northern countries, and they are used in official accounts of the UN Scientific Committee on the Effects of Nuclear Radiation. This is grounds for reporting the whole truth in this interview on the "nuclear aurora borealis" of the North.

[Correspondent] But what is it, this truth?

[Ramzayev] At the end of the 1950's and the beginning of the 1960's the institute, as the radiation hygienic network of Russia, recorded in individual tests on northern reindeer (from the Komi Autonomous Soviet Socialist Republic, Kamchatka, and Sakhalin) unusually high (by a factor of 10 for cattle) levels of cesium-137 and strontium-90. Inasmuch as tests were being conducted at that time on Novaya Zemlya, we (like scientists in the United States concerning tests in Alaska) associated them directly with the contamination of reindeer. Recording device measurements of the bodies of reindeer herdsman-breeders, who in 1963 were sent officially to Leningrad from the entire North, showed: The level of cesium-137 in their bodies was almost 10-30 times higher than in people who did not eat venison.

Of course, these data aroused grave fears, and they were reported to all local and central organs of authority. An intensive study was conducted on protective measures, along with our country's continuous political initiatives on banning nuclear weapons. For example, it was shown that venison, if acquired in the slaughter of the animals before their transfer to lichen pastures, becomes virtually clean. All other products of northern production proved to be beyond suspicion. But what is interesting! The described radiation situation was identical throughout the Arctic world. My previous efforts and those of my colleagues (and those of the Americans as well) "to ascribe" all of the manmade radioactivity that fell here only to the testing ground on Novaya Zemlya was a fiasco.

[Correspondent] Do you not want to say that there was another source of radioactive contamination?

[Ramzayev] Despite all of the efforts of our institute and the network of radiation hygiene inspection and the Goskomgidromet [USSR State Committee for Hydrometeorology and Environmental Inspection] to acquire convincing proof on the entire seacoast of the Arctic Ocean of the presence of endemic (local) radioactive traces from Novaya Zemlya explosions, we did not achieve any results. Even the measurements that we



performed through aerial gamma ray surveying immediately after the detonation of especially powerful bombs gave a hum level of 5-25 microroentgens per hour, which corresponds to natural radiation. These values were also not changed by our recent measurements in October of 1990. What is the point here?

The fact that the Novaya Zemlya tests were conducted according to a so-called "bombing" routine, loading the stratosphere with radioactive products and, this is the main thing, forming its own "increment" to other tests on other test ranges. That is, the influence of the test range was not direct, but only intermediary. It is for this reason that the level of radioactivity in the most charged "lichen-reindeer-human" chain is conditioned not by the distance from Novaya Zemlya but by the amount of atmospheric fallout. That is, radioactive precipitation and its appearance in lichens is associated, as has been well established, with fission gases in the form of xenon and krypton that were raised during the explosion into the stratosphere, where powerful winds mix them with debris from all the explosions of other countries whose test ranges are situated in the northern hemisphere. It is practically impossible to determine the origin of these nuclides, whether they are ours or from the American Nevada.

[Correspondent] But you will agree that knowledge of this mechanics does not alleviate the lot of people who live in the North. What difference does it make from what debris one gets sick?

[Ramzayev] I cited this example for this reason. The United States, in continuing the explosions, should be held responsible to the world community. Including to the people of our North.

This aspect should also be taken into account. Less radioactive material by a factor of two fell on a unit of territory in the Far North than at the latitude of Moscow. And, nonetheless, native northern inhabitants turned out to be exposed to the effect of cesium-137 and other nuclides by a factor of 10 times more than Muscovites. Why? The whole matter is a peculiarity of the flora and fauna of the region, but, specifically, the lichens and their fodder significance. They have an enormous (by comparison with grasses) sorption surface per unit of mass, which, in the form of microscopic mushroom-like fibers, are completely exposed to radioactive fallout. A lichen lives for dozens of years, and during this entire time it "sucks in" radionuclides from the soil. But "washing out" these nuclides from the lichen, and right after this from the reindeer and reindeer breeders, is almost five times slower than for similar elements of the ground chain in other regions. The lichen in Moscow and the middle latitudes, for example, is twice as radioactive as in the North Circle, but it does not have that kind of fodder significance.

[Correspondent] Has the halt in tests on the ground and in the atmosphere changed the picture somehow?

[Ramzayev] After the partial ban on tests in the northern hemisphere (from 1963), the levels of artificial long-life radionuclides, and immediately after them also the doses of radiation among the aborigines of the Far North, began to decline, and at the present time have dropped by a factor of 10 in the latter. Among inhabitants of the middle latitudes the cleansing began a year earlier and was quicker. On the average, in the past 30 years herdsman-reindeer breeders and members of their families, whose average daily consumption (per year) of venison throughout the North, according to our calculations, is 250 grams, received an additional effective dose of 100 millirems per year (in 30 years—3 rems). Thus, by comparison with people who do not consume venison, a herdsman-reindeer breeder and members of his family, whose number amounts to 100,000 persons, for the last 30 years received a dose of six rems additional to the usual average of "our" 13 rem dosage. What does this mean? According to the latest risk factor, 440 persons out of 100,000 could end up with tumors as a whole with inherited defects. But under normal conditions (without additional radiation), death from cancer is approximately 2,000 persons in a population of 100,000. It is not difficult to grasp that a purely theoretical increment to this number of another one percent cannot be registered.

[Correspondent] How did the employees in your institute take these factors into account in the work? Did they try to influence anything?

[Ramzayev] We systematically monitored the health of the northerners, and we looked for a connection to the aforementioned rems. It turned out, which is not easy to believe, that oncological mortality correlates inversely with the level of doses from cesium-137. Among native inhabitants of the Kola Peninsula the dosage level is almost five times more than among residents of the tundra and Yakutia, and the mortality from cancer of the esophagus (which in the North is 15-20 times higher than among inhabitants of the middle latitudes) is the highest among the Yakuts, and the lowest among the Murmansk inhabitants. On the other hand, mortality from cancer turned out to be closely tied to the severity of the climate, and, according to our version (which still has to be proved), to the consumption of hot drinks.

And finally: The whole radioactive "mess" now has to be sorted out from those remote difficult times when nuclear explosions were conducted in the open. Underground explosions did not add to contamination of the environment. Measurements even on Novaya Zemlya itself in 1991 (from Vaygach to Matochkin Shar) showed that the levels of radiation there fall in the natural range almost everywhere. That is why the complaints that Novaya Zemlya is a very dangerously contaminated territory suffer from a lack of objectivity and populism.

My colleagues and I have declared repeatedly that we are against nuclear weapons. At the same time, enjoying the right of a scientist, I would like to remove the entire burden of doom from the population of the Far North, which lies on them either due to a lack of knowledge or



to misunderstanding. The existing radiation does not carry a real threat to their health. And the conduct of any kind of measures in radiation protection from bomb radioactivity is not required at the present time anywhere on the territory of Russia's Far North.

### **Norwegian-Russian Team To Search for Sunken Reactors in Novaya Zemlya Area**

92WN0723A Moscow IZVESTIYA in Russian  
14 Aug 92 Morning Edition p 6

[Article by Marat Zubko: "A Norwegian-Russian Expedition Sets Off for Novaya Zemlya"]

[Text] According to a report from the Norwegian telegraph agency NTB, a scientific expedition comprised of Norwegian and Russian experts is setting off for the island of Novaya Zemlya on Saturday, 15 August.

The expedition is starting from the Norwegian Arctic city of Kirkenes aboard a Russian vessel. It will be headed by Lars Feyn, a scientist from the Norwegian Institute of Marine Research. The experts have made it their goal to determine the burial sites of radioactive materials, their size, and the hypothetical threat to the environment.

According to information published in the Oslo newspaper AFTENPOSTEN, the Norwegian side possesses a map showing the locations where, in particular, 12 retired atomic reactors removed from Soviet submarines and icebreakers were sunk in the vicinity of Novaya Zemlya.

The newspaper asserts that this map was received from Russian colleagues by the so-called "Barents Sea Group," which contained representatives of the Norwegian foreign affairs and environmental ministries and the radiation safety service. It recently returned from Russia. Judging from this map, the larger part of the sunken reactors are located east of Novaya Zemlya—that is, in the Kara Sea, but some are in the Barents Sea as well.

It is not difficult to surmise that confirmation of information that the USSR sank radioactive wastes in the seas (talk of this began long ago in the West) rocked the people of Norway, the economy of which depends to a considerable degree on fishing industry. Roald Setre, an expert from the Marine Research Institute, did hasten to reassure Norwegians, stating in the press that at the moment, there is no threat of contamination of fish populations in the Arctic Ocean.

"Measurements of the radioactivity of fish caught in Barents Sea," he affirmed, "showed that the radioactivity level is much below the norm established for food products after the Chernobyl Nuclear Power Plant accident." To put it specifically, it is 60 times below the norm, the expert said.

Nonetheless Norwegian fishermen and fish industry entrepreneurs demanded that an independent service be established in the country to regularly test the fishing banks for radioactivity.

The Norwegians are pursuing two goals here. First, they want to make sure that the fish they catch is uncontaminated (a significant part of their catch comes from northern waters). And second, Norway's fish processing factories depend to a considerable degree on deliveries of fish caught by Russian vessels. And inasmuch as it is difficult for Norwegians to verify the areas of the sea in which our fishermen are fishing, they wish to know the cleanliness of fish populations in the northern seas in general.

### **Nuclear Waste Burial Site Planned for Novaya Zemlya**

PM1808125192 Moscow KRASNAYA ZVEZDA  
in Russian 18 Aug 92 p 3

[Captain Second Rank Vladimir Gundarov report under the "Direct Line" rubric: "New Burial Site on Novaya Zemlya. Specialists Consider It Safe. Oblast Soviet Thinks Differently"]

[Text] Murmansk, 17 Aug—The Moscow Scientific Research Planning Institute of Industrial Technology has prepared draft specifications for the construction of a radioactive waste burial site on Novaya Zemlya. The draft is now undergoing state expert analysis, which is being carried out by specialists from the Ministry of Ecology and Natural Resources, the Ministry of Atomic Power Engineering and Industry, and the Ministry of Health, as well as a number of other organizations and departments responsible for the safe burial of radioactive waste.

In the opinion of A. Mikhaylov, Murmansk Oblast chief radiologist, the first major practical step has been taken toward resolving the problem of the permanent burial of hazardous waste. The burial site planned for Novaya Zemlya meets all the main IAEA [International Atomic Energy Agency] requirements for structures of this kind. According to specialists it guarantees the safe and virtually permanent burial of radioactive waste. But a considerable quantity of radioactive waste has already accumulated at the long-term storage sites and continues to grow year by year. The main suppliers of radioactive waste are ships and submarines of the Northern Fleet equipped with nuclear power plants, nuclear icebreakers of the Murmansk Shipping Company, and the Kola nuclear power station.

It is proposed that the project, which has the specialists' approval, be submitted to the public for extensive discussion. In that event, however, given the sharply negative attitude of Arkhangelsk Oblast Soviet deputies to the very idea of building a hazardous installation on their oblast's territory, it might not be the scientists who have the final say...

**Japanese Survey Shows Siberia Emitting Methane Gas***OW1408122392 Tokyo KYODO in English 1210 GMT 14 Aug 92*

[Text] Tokyo, Aug. 14 (KYODO)—Siberia is emitting large amounts of methane gas that contribute to the atmosphere's "greenhouse effect," according to a Japanese report published Friday.

At the same time, Siberia is helping reduce global warming by absorbing large amounts of carbon dioxide, the National Institute for Environmental Studies said in the report.

Both methane and carbon dioxide are among the heat-trapping gases whose buildup is known to increase the "greenhouse effect" in the atmosphere and bring on global warming.

The institute took air samples over forests and tundras in eastern Siberia in a 50-hour aerial survey last month in cooperation with a Russian research organization, institute officials said.

The density of methane over Siberian marshlands, which the officials said is generated by the decomposition of plant material, was higher than the world average.

But the density of carbon dioxide 300 meters above the ground was lower than the world average.

The officials said Siberian forests, like the Amazon rain forests, absorb a large amount of the gas.

**Krasnoufimsk Illnesses Linked to Radioactive Ore***92WN0689A Moscow MOSCOW NEWS in English No 28, 12-19 Jul 92 pp 10-11*

[Article by Vadim Chelikov: "Forgotten Menace"]

[Text] Year after year, those university students traditionally detailed for "emergency" farm work who happened to be working near Krasnoufimsk, Sverdlovsk Region, were hit by a mysterious disease. The press had advanced several hypotheses as to the origin of the disease before a sensational revelation arrived: the European-Asian News Agency reported that scientists believed the real culprit was thoron, a gaseous by-product of the radioactive decay of thorium.

**Out-of-Bounds Zone**

A radiometer held by Gennady Alyabishev, deputy chief of administration of the Krasnoufimsk District, displayed the radiation intensity as 1,500 micro-roentgen/hour, and its digital indicator showed 6,000 (maximal tolerable exposure is three minutes) right outside the storehouse.

The wooden stovehouses were built in 1941 for storing grain and sugar. The builders were local camp inmates

whose remains are perhaps rotting away in the neighbouring bog. Back in 1960, all 24 storehouses were suddenly vacated of grain. Replacement materials—auburn sand in sacks—were rushed in. Men were unloading the 50-kilogram sacks from railway cars and carrying the sacks in on their backs. People arrested for minor offences and sentenced for 15-day forced labour were sent in to help. The grain was loaded into the emptying cars. Men were walking on sand barefoot, and sitting on it during snack breaks.

Waybills identifying the sand as 82,000 tons of monocyte ore containing 2-6 percent of thorium-232 arrived only six years later! That discovery made the local authorities introduce an out-of-bounds zone around the storehouses. In 1986, the Pobeda Integrated Stores which own the storehouses (and are part of the Russian Federation state reserves system) cut the number of wardens sevenfold, down to merely four old men. Soon thereafter, the roof of one of the stores went down sending out quantities of radioactive dust. In December 1989, there was a narrow escape from a Chernobyl-size catastrophe when a railway car with ammonium nitrate caught fire while entering the neighbouring storage of agricultural fertilizers. Luckily, a worker put on a rail shoe. The 1,500 tons of ammonium nitrate already stored there could have exploded in an immense bang which would have dispersed thousands of tons of radioactive ore over vast expanses.

**Korean Gift?**

What was the origin of the ore? Why was it brought in? According to unofficial information, it was delivered from Korea, allegedly for the production of uranium fuel. However, the plan was abandoned because of the high cost of ore-enrichment technology or due to the discovery of uranium-ore deposits in the USSR itself. According to Alexei Babayev, Chief Engineer of the Pobeda Integrated Stores, the decision to hand the sand over to the Main Department for the Material Reserves of the USSR for long-term storage was made at the top of the state management, ignoring the fact that Pobeda was designed to store food only and did not have experts for work with radioactive materials.

Deputy Chief State Sanitary Inspector Zalikin in a classified message informed the Krasnoufimsk sanitary inspectorate about the arrival of radioactive cargo. Local sanitary inspectors were alarmed and filed an inquiry with the Russian Federation Public Health Ministry. The Ministry gave its approval only four months later, after a lot of the radioactive sand had been brought in and stored already. The regional sanitary inspectorate sanctioned stalling of the work on depositing the ore in April 1961. The Ministry banged its fist on the table and confirmed its authorization of storage of the ore there. The same letter from the Ministry sanctioned (for the purpose of quieting down local people's protest) the introduction of a 600-metre-deep out-of-bounds area (exactly the distance from the nearest village). About 200

residents of a small worker settlement inside that area were to be resettled (which was finally done five years late).

The sanitary inspectors were discouraged from further intractability. Since then, the inspectors have been clearing locally-produced food (water, milk, bread, etc.) for consumption, cautiously reporting that "in terms of content of uranium and thorium, the food is only insignificantly different from before" and that "there's been no breach of regulations in the operation of the store-houses," noting that "the effect of radiation on environment hasn't been registered beyond 300 metres from the stores."

In the meantime, the stores were rotting away, as trains were passing only 100 metres away, carrying not only passengers but also easily flammable and explosive cargoes on the Moscow-Vladivostok route. Neighbouring fertilizer storages kept expanding even nearer to the Pobeda stores. But the situation at the ore-dressing integrated works in Ozyorny (where the ore was enriched before storage) was the greatest outrage of all: sanitary inspectors were not allowed there at all, while the radioactive sand was routinely used by local people in building practices, for facing paths and in children's sandboxes. After the status of a security-sensitive installation was removed from the Ozyorny Integrated Works, many local houses revealed such high levels of radioactivity that simple radiometers could not register its extent. In contradiction to the resettlement decision, people continue to live in their old houses, since the local authorities have no money to spare for new housing development.

#### Classified

In 1989, the environment-conscious Greens and common Krasnoufimsk residents demanded the removal of the sand away from the Sverdlovsk Region. Their protest forced the Department for Material Reserves into action. The All-Union R&D Institute for Industrial Technologies carried out a detailed study of the influence of the objects in Krasnoufimsk on the natural environment. The study revealed that the Public Health Ministry's approval of the storage of the radioactive sand was not based on any scientific justification whatsoever. Gases from thorium—thoron and its byproducts—proved to be the most perilous factor there.

From classified conclusions of the Institute's experts: "Inhaled byproducts of decomposition of thoron found inside the stores and up to 700 metres away pose the gravest danger. The concentration of the said decomposition byproducts is 70 times greater than the tolerance level. Personnel should not be allowed to be inside for more than 40 minutes and within "600 metres from the stores for more than three hours daily."

Panic spread around Krasnoufimsk. Enterprises and higher schools severed whatever agreements they had with the local collective farm. The Greens warn that they

will block the passage of railway trains with their bodies unless the sand starts to be taken away.

However, Nikolai Romanov, Chief Academic Secretary of the Ural Department of the Russian Academy of Sciences, believes that there is no sufficient ground to blame the students' illness on the thorium.

#### Until Better Times?

The Institute has developed nine different options to solve the problem caused by the radioactive sand. True, the majority of the variants are impossible. It was proposed to have the stores buried under artificial hills and forget about them until a better solution crops up. But the gas would continue to seep away nonetheless, and local people are not happy about this prospect. In an alternative variant, the sand is to be put in iron cases and buried in abandoned mines. However this would mean moving 90 trainloads. Besides, a worker can't be allowed to be exposed to the radiation emanating from the sand for more than two and half hours a month.

There is a more practical solution, however. The concentrated ore contains up to 50 percent of rare-earth elements: europium, scandium, and lutecium. Even with vastly lower prices, a ton of that sand costs as much as 60,000 roubles. Business entrepreneurs from the Baltics are offering to take away the sand (but return the thorium). To every appearance, Russia itself might think again about this source of rare-earth elements, since the natural deposits of the above are in Kazakhstan.

Nuclear power experts believe that industrial systems (reactors in NPPs and nuclear ice breakers) using thorium can be much safer than ones using uranium for fuel. Unfortunately, this country, according to the Ministry of Nuclear Power Generating Industry, is not designing or developing thorium-fuelled systems, so that thorium will remain unwanted for at least 50 to 70 years to come. But what about removing the menace to Krasnoufimsk?

#### Krasnoyarsk Plutonium Plant Billed for Environmental Damage

PM0708151192 Moscow IZVESTIYA in Russian  
6 Aug 92 Morning Edition p 2

[Aleksey Tarasov report: "People of Krasnoyarsk Demand 6.730 Billion From Atomic Specialists"]

[Text] The total damage inflicted on the environment and people's health by the mining and chemical combine in Krasnoyarsk-26 (producing weapons-grade plutonium) has been estimated at more than 6.5 billion rubles [R].

IZVESTIYA has a copy of an action sent to the Russian Prosecutor's Office, V. Mikhaylov, Russian minister of atomic energy, and V. Lebedev, general director of the mining and chemical combine. The document has been signed by the top men from three organizations: R.

Solntsev of the Krasnoyarsk Survival Fund (he is also chairman of the kray administration committee for sociopolitical relations); A. Bolsunovskiy of the kray environmental movement; and Professor of Medicine V. Ivanov of the local branch of the international movement "Doctors Against Nuclear War."

As a result of discharges from the gigantic underground combine the Yenisey's water, sediment, river meadows, and islands and spits are saturated with radionuclides. Radionuclide contamination can be traced 1,500 km downstream.

The main potential threat to the health of the region's residents, according to researchers, comes from plutonium contamination of the soil. However, all information about the plutonium content in the air, the soil, and in the water discharged by the combine is still classified. Citing U.S. figures, the people of Krasnoyarsk go on to say that one-millionth part of a gram of plutonium causes lung cancer when inhaled....

Needless to say, the damage due to the work of the secret combine can only symbolically be assessed in monetary terms. Nonetheless, why have atomic specialists been asked to pay precisely R6.730 billion? This figure is based on a calculation of the direct expenditure needed to clean the bed and river bank zone of the Yenisey over a 250-km stretch from the place where the radioactive stream is discharged to the village of Strelka, and to deliver 70 million cubic meters of topsoil to the burial area at the combine. What is more, nuclear workers are being asked to reimburse the costs of buying dosimeters, giving them to people resident in the zone affected by the combine (i.e. 1.2 million people), and teaching them to use the instruments.

"We realize that the combine and the ministry will hardly have that kind of money," R. Solntsev said, "and we have no intention of making them pay up. A victory in court is what is important to us."

This fact would indeed be of fundamental significance. A person's right to a favorable environment needs to be protected, and the practice of taking to court enterprises which damage people's health and appreciable compensation payments should become the norm.

However, the people of Krasnoyarsk should not dream of raising environmental standards in their area: Despite the fact that parliament has not decided which concept to choose for dealing with Russia's radioactive waste—the open or closed circuit—the government recently ordered money to be earmarked to continue construction in Krasnoyarsk-26 of the notorious RT-2 plant (for the regeneration of spent nuclear fuel). (What is more, nuclear workers themselves attest that Krasnoyarsk-26 is joining the process of dismantling nuclear warheads. The tons of plutonium produced here will most likely also return here—for storage).

We are now disarming and concern for the state of the environment seems once again to be inopportune, just as it was yesterday when we were arming.

### Yenisey Radiation Levels Detailed

92WN0701A Moscow ZELENYY MIR in Russian  
No 19-20, May 92 pp 6-7

[Unattributed report: "Nuclear Trail of Yenisey"]

[Text] *Radiation levels in the Yenisey River from Krasnoyarsk to Igarka were studied in August-September 1990 as part of the comprehensive program of environmental impact evaluations in Krasnoyarsk Kray.*

More than 200 samples were taken and analyzed in over 20 locations.

The sites were chosen with the aid of aerial gamma-radiation surveys indicating the sections with the highest gamma field readings.

Samples were taken and analyzed according to the standard procedures of the State Committee for Hydrometeorology. All of the field studies were conducted on the specially-equipped boat "Myatezhnyy."

The presence of natural radionuclides in the Yenisey River is the result of sewage from the mineral chemical combine. Studies of the impact of sewage on the level of radioactive pollution in the river included the selection and analysis of water, sediment, and algae samples and fish in certain sections.

The underwater outlet for the sewage from the combine is located 50-100 meters from the right bank of the Yenisey. At the time of the studies, the level of gamma-emitting nuclides at a depth of 0.5 meters in the zone where the sewage converged with the river water had reached 3,000 mcr/hr. The fact that the sewage was discharged near the right bank was the reason for the higher pollution levels in the right half of the channel and coastal zone for a fairly long distance, almost all the way to Strelka. After the point where the Yenisey merges with the Angara River, the cleaner water of the Angara forces the Yenisey water toward the left bank.

In the first 20 kilometers from the outlet, the force of the radionuclide dose is diminished by a factor of 150 as a result of disintegration and diffusion. The subsequent reduction of the gamma field is more even.

The figures in Table 1 are calculations of the concentration of the most significant nuclides and the level of beta-activity in the water, based on the analysis of the test samples.

Table 1. Concentration of Radionuclides in Water of Yenisey River, Curie/liter

Sample location and distance from discharge site	Concentration, C/l											
	Mn <sup>56</sup>	Na <sup>24</sup>	As <sup>76</sup>	Np <sup>239</sup>	Cr <sup>51</sup>	Zn <sup>65</sup>	Co <sup>56</sup>	Co <sup>60</sup>	Cs <sup>137</sup>	Fe <sup>59</sup>	Mn <sup>54</sup>	beta
Tartat Bay, 10 km up river	—	—	—	—	—	—	—	—	—	—	—	—
Discharge site, 0 km	4.0-8	1.0-7	2.5-9	5.0-9	5.5-9	5.0-11	1.2-10	8.0-12	2.5-11	5.0-11	2.5-11	5.1-7
Atamanovo, 6 km	3.0-9	2.1-8	3.0-10	1.0-9	9.1-10	5.0-12	1.4-11	—	5.0-12	8.8-12	4.8-12	4.7-8
Bolshoy Balchug, 16 km	7.0-10	3.5-9	7.6-11	5.1-10	2.0-10	2.1-12	3.7-12	—	—	—	—	5.9-9
Kononovo, 25 km	3.3-10	3.1-9	6.5-11	1.5-10	1.6-10	—	—	—	—	—	—	4.3-9
Pavlovshchina, 57 km	—	9.3-10	2.6-11	7.0-11	8.4-11	—	—	—	—	—	—	1.5-9
Yukseyevo, 78 km	—	7.0-10	8.0-12	—	1.5-10	—	—	—	—	—	—	1.0-9
Strelka, 249 km	—	1.1-10	—	—	7.5-11	—	—	—	—	—	—	—

Notes: 1. These are the total concentrations of filtration and suspension; 2. The dash indicates that the concentration of this radionuclide in the sample was below the level measurable by this method, constituting 2-12 C/l; 3. The radionuclide concentration figures in the table should be read as follows: 4.0-8 signifies  $4.0 \times 10^{-8}$  C/l; 8.0-12 signifies  $8.0 \times 10^{-12}$ , and so forth.

Soil samples were taken from the areas below the high-water mark for the last 30 years. Table 2 indicates the radioactive pollution of this zone is apparent all the way

from the site where the radioactive substances were dumped to Igarka.

Table 2. Radioactive Pollution of Yenisey Floodplain

Sample location and distance from dump site	Sample code	Soil pollution density, C/km <sup>2</sup>										MED, mcr/hr		
		Mn <sup>54</sup>	Co <sup>60</sup>	Zn <sup>65</sup>	Cs <sup>134</sup>	C <sup>137</sup>	Ce <sup>144</sup>	Eu <sup>152</sup>	Eu <sup>154</sup>	Eu <sup>155</sup>	Total	K-40	H-0m	H-1m
Tartat, 10 km up river	6-r	—	—	—	—	0.03	—	—	—	—	0.03	2.00	11	12
	9-l <sub>1</sub>	—	—	—	—	0.06	—	—	—	—	0.06	—	14	13
	13-l	—	—	—	—	0.15	—	—	—	—	0.15	2.30	14	13
Atamanovo, 6 km down river	17-r	0.28	1.61	0.33	0.02	0.58	—	3.13	1.01	1.41	8.37	0.53	90	55
	18-r	0.23	2.33	0.36	0.18	5.51	0.18	3.04	1.82	3.72	17.37	0.54	53	30
	19-r	1.85	1.42	2.00	0.49	2.72	—	11.02	3.91	8.11	31.52	3.71	93	70
	20-i	1.51	12.04	1.81	0.21	4.44	1.82	12.01	4.83	2.43	41.10	2.72	197	136
	23-l	—	—	—	—	0.03	—	—	—	—	0.03	1.22	13	11
	24-i	0.16	2.20	—	0.09	3.03	0.64	2.13	—	—	8.25	2.40	59	49
Bolshoy Balchug, 16 km	25-i	—	1.02	—	—	2.82	—	1.72	—	—	5.56	2.44	41	36
	26-i	0.22	2.81	0.15	0.07	1.33	0.73	1.81	0.37	—	7.49	3.41	56	48
	27-r	0.05	1.83	0.14	0.05	0.83	—	1.85	0.35	0.79	5.89	0.77	48	42
	29-r	0.37	2.72	0.38	—	2.02	0.16	5.30	2.30	3.80	17.05	0.90	78	48
Kononovo, 25 km	33-l	—	0.13	—	—	0.26	—	0.35	—	—	0.74	2.40	14	15
	34-l	—	—	—	—	0.07	—	—	—	—	0.07	2.64	12	12
	36-r	0.06	0.61	0.15	0.02	0.67	0.28	0.41	—	0.21	2.41	0.77	26	36
	37-r	0.11	1.62	0.05	—	3.41	—	1.51	0.23	—	6.93	1.82	54	40

Table 2. Radioactive Pollution of Yenisey Floodplain (Continued)

		Soil pollution density, C/km <sup>2</sup>										MED, mcr/hr		
	74-77-l	0.75	2.27	0.47	0.09	3.42	1.13	1.87	0.23	0.56	10.79	2.36	59	42
Strelka, 249 km	78-i	—	1.32	0.25	—	1.41	—	1.16	1.11	—	5.25	2.30	36	27
	79-r	0.18	0.75	—	0.06	1.96	2.23	0.58	—	—	5.76	1.13	30	21
	83-i	0.63	1.92	0.34	—	1.73	0.68	1.33	0.26	—	6.89	2.74	67	44
Lesosibirsk, 290 km	85-l	—	—	—	—	—	—	—	—	—	—	2.58	18	15
	87-i	—	—	—	—	0.07	—	—	—	—	0.07	3.62	12	13
	88-r	—	—	—	—	0.01	—	—	—	—	0.01	1.42	12	10
Igarka, 1,667 km	112-r	—	0.01	—	—	0.10	—	—	—	—	0.11	1.52	12	12
	113-l	—	0.01	—	—	0.04	—	—	—	—	0.05	1.83	15	12

Notes: The dash signifies a figure below the level measurable by this method; the letters in the sample codes signify: r—right bank, l—left bank, i— island.

Whereas the soil close to the source is polluted mainly by nine gamma-emitting nuclides—Cesium-137 and 134; Cobalt-60; Manganese-54; Zinc-65; Europium-152, 154, and 155; and Cerium-144—there are only two long-lived nuclides farther on, 500 kilometers from the source—Cesium-137 and Cobalt-60—that fall within the measurable limits of this testing procedure.

The location of the source of the RS (radioactive substances) resulted in the pollution of the right bank of the river virtually from the dumping site on. Pollution levels on the left bank become measurable at 50 kilometers from the dumping site.

The maximum density reading of soil pollution by all of the test nuclides was 41 C/km<sup>2</sup> (on Atamanovskiy Island,

6 kilometers from the RS discharge site). The MED in this location was 136 mcr/hr. Pollution levels in the different sections were extremely uneven, and at a distance of more than 25 kilometers from the RS dumping site they were almost unaffected by the distance from the source and were dependent on the hydrological parameters of the river, especially by flooding, which stirs up the bottom sediments, where the nuclides accumulate, and redeposits them in the floodplain and on islands.

At distances of 25-500 kilometers from the source, the maximum levels of radioactive soil pollutants ranged from 3 C/km<sup>2</sup> to 10 C/km<sup>2</sup>.

The data in Table 3 indicate the pollution levels of floodplain soil and bottom sediments by the most dangerous plutonium and strontium nuclides.

Table 3. Plutonium and Strontium Content in Soil of Floodplain and Bottom Sediments

Sample location and description of sample	Concentration, kC/kg			Pollution density, mC/km <sup>2</sup>		
	Pu <sup>238</sup>	Pu <sup>239,240</sup>	Sr <sup>90</sup>	Pu <sup>238</sup>	Pu <sup>239,240</sup>	Sr <sup>90</sup>
1 km down river from combine dump site, sediment	0.15	0.22	140	12	18	13,900
Atamanovo, 6 km, right bank, sediment	0.035	0.1	—	3	11	
Atamanovo, Atamanovskiy Island, 6 km, soil	0.11	0.23	—	23	47	
Predivinsk, 97 km, soil	0.02	0.08	—	3	15	
Strelka, 250 km, Ust-Tungus Island, soil	0.06	0.14	—	9	22	

Notes: The concentration of plutonium is calculated with the air-dried weight of the samples; the dashes indicate figures below the level measurable with this method (under 15 kC/kg).

The level of these nuclides in the soil is five times as high as in the sediment in the same section of the river and dozens of times as high as the global level of pollution.

The studies indicated the following:

1. The radioactive pollution of the Yenisey River and its floodplain was caused by sewage from the mineral chemical combine.

The river is polluted for more than 800 kilometers from the source and the floodplain is polluted for up to 1,500 kilometers down river from the dumping site.

2. The dumping of the combine's sewage near the right bank is the reason for the higher pollution levels in the right half of the channel for a distance of 250 kilometers and the right bank of the river for a distance of 50 kilometers from the dumping site.

3. The exposure dose of gamma radiation in the water at the center of the radioactive flow in the discharge site was 3,000 mcr/hr at the time of the study, and the figure at a distance of 20 kilometers was reduced by a factor of 150 by the diffusion of the flow and the disintegration of short-lived nuclides.

4. The highest level of radioactive pollution in the bottom sediment was recorded in the part of the river running from the dumping site to Bolshoy Balchug. At a distance of one kilometer from the site, the pollution levels were 35 C/km<sup>2</sup> for Chromium-51, 8 C/km<sup>2</sup> for Cobalt-60, 4 C/km<sup>2</sup> for Zinc-65, and 2.9 C/km<sup>2</sup> for Cesium-137. Below Bolshoy Balchug the level of sediment pollution was much lower, close to the background level for the area below Lesosibirsk. Depth tests of the sediment also revealed the virtually equal distribution of long-lived Cobalt-60 and Cesium-137 isotopes to a depth of 15 centimeters.

5. There was a high level of pollution in the algae below the combine dumping site.

6. The main gamma-emitting nuclides found in fish samples were Zinc-65 and Cesium-137. These nuclides were even found in fish at distances of over 600 kilometers from the dumping site.

7. The radioactive pollution zone of the islands and floodplain of the Yenisey River with a gamma-radiation dose above the natural background stretches 500 kilometers down river, beginning at the combine dumping site on the right bank and 50 kilometers down river on the left, and covers an area of more than 1,500 kilometers. The width of the zone is limited by the water line and the high-water mark of the last 30 years.

8. The radioactive pollution levels in the floodplain of the Yenisey River are extremely diverse. Within the first 25 kilometers down river from the source, the level of pollution drops from 41 C/km<sup>2</sup> (Atamanovskiy Island) to 7 C/km<sup>2</sup>. For the next 500 kilometers the pollution level does not depend on the distance from the source

and ranges from 3 to 10 C/km<sup>2</sup> because of the hydrological features of the river. At a distance of 500-1,500 kilometers from the source, the level of Cesium-137 and Cobalt-60 is under 0.1 C/km<sup>2</sup>.

9. The nuclides with the greatest potential impact on human health in the soil were Plutonium-238, 239, and 240; Cobalt-60; Cesium-137 and 134; Manganese-54; Zinc-65; Europium-152, 154 and 155; Cerium-144; and Strontium-90.

### Researchers Invent Method To Prevent Underwater Nuclear Contamination

LD0308110492 Moscow *ITAR-TASS in English*  
0912 GMT 3 Aug 92

[By ITAR-TASS correspondent Veronika Romanenkova]

[Text] Moscow, August 3 (TASS)—Russian researchers worked out a method to prevent underwater nuclear contamination, Vladimir Slutsker, vice president of the joint venture "Sitek," told TASS on Monday. The "Sitek" firm holds a patent on the know-how.

According to Slutsker, researchers created a modified chitozan substance (a biopolymer obtained from the material which crabs use in "building" their nests) to blockade radionuclides.

After chitozan is blended with algenic acids obtained from seaweeds, the new jelly-like material is placed into capacities. Under the impact of salt and calcium in the sea water, it instantly sticks and becomes resilient as rubber. The material completely prevents any nuclear leakage. In addition, it is waterproof and cannot be washed out by the current.

The U.S. Patent Bureau is considering the invention, said Slutsker. He explained the world's acknowledgment will help arrange international works to prevent ecological disasters which may happen as a result of regular nuclear outshots into the ocean.

Slutsker named the U.S. as a possible partner as it is the only country to have the "Global-Challenger" ship making it possible to conduct such works.

Probably, the new method will be used to prevent nuclear contamination on land as well.

### Radioactive Lake in Southern Urals To Be Eliminated

OW2508142392 Moscow *Central Television First Program and Orbita Networks in Russian* 1855 GMT  
23 Aug 92

[S. Sergeyev video report; from the "Utro" program]

[Text] [Sergeyev] In former times, this small lake in the southern Urals was rich in fish and fowl, but during the last 40 years it became a dumping site for the chemical

combine Mayak, which is the world's largest manufacturer of weapons-grade plutonium. Lake Karachay has now been turned into the world's worst depository of harmful, long-life radioactive nuclides. Here the radiation is measured in excess of 120 million curie, which is two and a half times greater than at Chernobyl. Military projects are being curtailed, and for several years now work has been under way to eliminate the dead lake. [video shows lake; bulldozers; trucks depositing rocks and concrete blocks into the lake; what appears to be personnel taking radioactivity measurements on the lake shore; and an interview with an unidentified worker]

[Begin video recording] [Unidentified worker] More than two thirds of the lake's volume has been filled, and a little less than 14 hectares is all that remains. We are carrying out this project pretty intensively because it is an acute ecological problem. The neighboring region must be secured against possible influence by this lake.

[Sergeyev] So, you fill the lake with rocks and hollow ferro-concrete blocks. But where does the deadly water go?

[Worker] First, the water contains about a thousand times less radioactivity than the bottom sediments and silt which have accumulated here. Therefore, the main task is to cover these silt deposits—which contain 95 percent of all radioactive nuclides—with the hollow blocks. As for the water, it partially remains in the landfill and partially evaporates. Eventually this place will become a green glade. We will add a layer of gravel, then a layer of clay, then a layer of fertilizer, and finally grass. However, this glade will remain under strict protection and control for many years.

[Sergeyev] Are there any problems in completing this project of eliminating Lake Karachay?

[Worker] There are problems. One is financial, since our own enterprise is funding all the work of eliminating Lake Karachay. These funds are not enough. Therefore, centralized funding is necessary.

[Sergeyev] Your drivers are performing work which is both difficult and dangerous. What are the bonuses?

[Man] The drivers' bonuses include a 36-day holiday, retirement at age 50, additional food vouchers, and a salary of 2700 rubles. [end video recording]

[Sergeyev] Today this is not really a great reward for such work. The state should assist these people and the Mayak combine in eliminating the dangerous reservoir. After all, until quite recently the state did participate in speeding up military projects which contributed to the spread of radioactive pollution over tens of kilometers. Now, the death of Lake Karachay must be speeded up.

## Major Oil Deposits Discovered on Pechora Sea Shelf

LD0308082292 Moscow ITAR-TASS in English  
0718 GMT 3 Aug 92

[By ITAR-TASS correspondent Vasily Belousov]

[Text] Murmansk, August 3 (TASS)—Enormous deposits of hydrocarbons were discovered on the shelf of the Northern Pechora Sea, the south-eastern portion of the Barents Sea at the mouth of the Pechora River.

"The information we possess gives grounds to compare the region with the Persian Gulf area," Gennadiy Matishov, a corresponding member of the Russian Academy of Sciences, told TASS on Monday.

At present the technical feasibility report of developing the major deposit is being prepared jointly with foreign partners, he disclosed.

Matishov has just returned from the first international expedition to the Russian Arctic zone. Scientists from Russia, the United States, Norway and Denmark conducted biological and ecological research there.

Oil companies which are to develop the Pechora fields have to pay special attention to ecology in the region. It should remain at the level observed in the Pechora Sea by the international expedition.

## Options To Ease Lake Baykal Pollution Aired

PM1008141392 Moscow Russian Television Network  
in Russian 1445 GMT 5 Aug 92

[From the "M-Trust" program: Video report by V. Kodkin and I. Vanchugov, identified by caption]

[Text] [Kodkin] [Video shows scenes from shores of Lake Baykal] In line with many high-level instructions, the Baykal Paper and Pulp Combine must either switch production or shut down by 1 January 1993. The Irkutsk Oblast Soviet deputies are in a resolute mood, and they will not be swayed. The only thing is, they haven't thought about what will happen to the 15,000-strong city which grew up around the detested combine. The conflict between the labor collective and the local parliament is worsening. Here to give their viewpoint on the situation are plant director Valeriy Glazin, who is representing the combine, and his opponent Yuriy Utrobov, chairman of the Irkutsk Oblast Environmental Protection Committee.

[Utrobov] Nobody is saying that combines shouldn't be built, and nobody is saying that plants shouldn't be built or that industry in general shouldn't be developed. The issue revolves around the fundamental question of where to build them. After all, you wouldn't walk into the Hermitage and build a pigsty, would you? We already know that it is wrong to build such industrial units around Baykal. By all means, build them in some other place—and we won't be any the poorer, but on the



contrary we will be better off, and at the same time we will preserve what the Almighty, if you pardon the expression, gave us as a gift.

[Glazin] First of all, before the combine can get down to switching production, it has to be given the opportunity to do just that. Therefore the government will have to correct some of its government resolutions as soon as possible and bring them into line with today's realities. It should make its views known on the different options which we have prepared and calculated, and which we passed on to a commission of experts. And the commission of experts made its choice. It selected two versions which are ready for implementation. Now the government must decide on the way forward for us, draw up a financial plan, and adopt a decision on when and how all of this will be implemented. There is, of course, a second option. The second option is cheaper and simpler. We ourselves must be given the opportunity to switch production gradually, to do what we can ourselves. This is a longer process, but it is wholly feasible that, given time, we will have a closed system, we will not discharge water into Lake Baykal, and as for atmospheric pollution, the smokestacks you can see over there will stop disgorging smoke, there will be no harmful waste from the plant, and the environment will not be affected in any way by this plant.

[Kodkin] The Baykal combine has already been standing here for 27 years, and it is possible that it will survive even longer. If, that is, Valeriy Glazin achieves his aim and renders the combine completely harmless to our wonderful lake. [Video shows shot of Baykal]

#### **Severnaya Dvina One Most Polluted Rivers in Russia**

*LD0908135392 Moscow Mayak Radio Network  
in Russian 2100 GMT 8 Aug 92*

[Report by correspondent Valentin Bogomolov from Arkhangelsk Oblast]

[Text] The Severnyaya Dvina may have become the most ecologically unsafe major river in Russia. Specialists of the local department of health and safety, Sanepidnadzor [Sanitation and Epidemics Inspection], have revealed that the content of moribund bacteria in the river's water near Arkhangelsk has increased sharply since last year. Reasons are still unclear but this may have happened due to decreased general water outflow due to the dry summer this year. The slowing down of the water's downward current must have also had its negative effect. Russia's bureaucrats have halved the finances allocated for maintaining the depth of the river's shoals; several dredgers are staying idle altogether; and the disposal of unpurified sewage near Arkhangelsk continues. So, as last year, medics warn again of the dangers of swimming in the Dvina. Unfortunately, this advice is being neglected.

## **WESTERN REGION**

### **Ukraine Officials Cited on Chernobyl Sarcophagus 'Cracks'**

*OW0708184192 Moscow INTERFAX in English  
1807 GMT 7 Aug 92*

[Following item transmitted via KYODO]

[Text] Director of the Interregional Science and Technical Center "Ukrytiye" [Shelter] of the Ukrainian Academy of Science, Vladimir Karasik, said in an interview to the KHARKOV-NOVOSTI Ukrainian news agency Friday that he had just "endorsed" a resolution prepared by the republic's Cabinet of Ministers in accordance with which the second power unit of the Chernobyl nuclear power plant will be put out of operation. Its nuclear fuel will be supplied to a special storage facility which "already does not have enough capacity for storing fuel from the plant's first and third units." Therefore, the "Ukrytiye" director explains, the nuclear power plant cannot be shut down completely: the first and third units should be put into operation in order to avoid their freezing and "ensuing predicaments" (possible cooling of the reactors).

At a press conference in Kiev Vladimir Shcherbina, director of the "Ukrytiye" installation, universally known as the "sarcophagus," revealed that the latter was gradually fracturing due to the action of the radioactive elements, nuclear radiation leaking off as a result through the cracks in the sarcophagus. [sentence as received]

In the meantime, Vladimir Karasik, who heads the interregional science and research center "Ukrytiye," maintains that "there are no new cracks in the sarcophagus." He admitted, however, that "during the sarcophagus' construction its airtightness was not attained, which necessitates a more reliable safety warranty." In the meantime, the specialist emphasized, on the basis of the analytical results it was established that nuclear emissions through the cracks in the sarcophagus "do not exceed the standards of an operating nuclear power plant unit."

Anatoliy Panov, executive director of the "Zeleny Svit" [Green World] ecological association, said in an interview to the Ukrainian news agency that the summary area of the sarcophagus' cracks amounts to 1200 square meters. All these cracks, in his opinion, have formed as a result of the atmospheric processes and the action of radiation. Mr. Panov has expressed concern over the so-called "nuclear lobby" influence on the Ukrainian powers that be, adding that no works are carried out at the boiler facility construction site, whereas it is indispensable for shutting down the idle units of the Chernobyl power plant as envisaged by the resolution of the Ukrainian Supreme Soviet on October 29, 1991.

### Specialists Claim 'No Changes' in Chernobyl Sarcophagus

PM1108112192 Moscow IZVESTIYA in Russian  
11 Aug 92 Morning Edition p 2

[Valeriy Yakov report: "No Changes in Sarcophagus. No Reason for New Alarm"]

[Text] Television and the news agencies have excited public opinion in recent days with reports that there is a catastrophic situation developing at the Chernobyl AES [nuclear electric power station]: The 'Encasement' (known popularly as the Sarcophagus) is breaking up rapidly and threatens a powerful radioactive discharge. We requested competent specialists who have direct knowledge of Chernobyl to comment on this information.

For a start it is necessary to say that the information about the explosive situation at the AES did not just appear but can be attributed to specific authors—Chernobyl Ministry leader Yu. Shcherbak and 'Encasement' Center Director V. Shcherbina. Their alarming statements were the reason for a new hullabaloo surrounding the subject of Chernobyl.

In the opinion of Academician Spartak Belyayev, deputy director of the I. Kurchatov Nuclear Energy Institute, it was most likely political motives which were behind the alarming statements which the Ukrainian specialists made, and they are of a ephemeral nature. Their purpose is to draw attention not so much to an actual problem with the 'Encasement' as to its image.

But as far as the real situation at the station is concerned, a group of specialist researchers from the Kurchatov Institute which has been working at the 'Encasement' practically all these past years, asserts: No serious changes have occurred which give grounds for such menacing statements.

I also succeeded in getting in contact with Nikolay Shternberg, chairman of the Ukrainian State Committee for Nuclear and Radiation Safety, who likewise confirmed: Nothing unexpected has happened or is happening at the Chernobyl AES. The problem of the sarcophagus, of course, requires attention and there are enough questions awaiting resolution, but in its present state there is no particular reason for great alarm.

### Ukraine's 'Atmograd' Seeks Government Environmental Aid

PM0608101392 Moscow Teleradiokompaniya  
Ostankino Television First Program Network  
in Russian 0200 GMT 4 Aug 92

[From the "Novosti" newscast: Video report by G. Klimov and V. Shtengelov, identified by caption]

[Text] [Video shows correspondent standing in street] [Klimov] This city is a long way from Chernobyl, but radiation levels are higher than normal here. It is

Ukraine's "Atomgrad," the city of Zheltyye Vody. It sprang up in the fifties on the Dnieper steppes, working to meet the defense industry's requirements. It is the only city in Ukraine where uranium is extracted and processed at the same time. Whether it was inevitable or whether it was consciously sacrificed to the higher interests of the defense industry, the fact is that radioactive waste polluted Zheltyye Vody. Moreover, no care was shown in the selection of materials for highway and housing construction—radioactive materials were used. About five years ago the asphalt was removed and sections irradiated by gamma radiation were resurfaced. The park and the pioneer camp along with other polluted facilities were decontaminated, but that is as far as it went. Money is needed. The city soviet has asked the republic's Council of Ministers to grant Zheltyye Vody the status of a town in increased environmental danger.

[A.I. Shevyakov, city soviet executive committee chairman, identified by caption] There should be a program to provide the population with welfare and radiation protection, and we are currently working on this. It must be said outright that it will not be a program that can be implemented in a day. It is a long-term program requiring substantial capital investment. We are now working with the government, which is giving us all-around support and assistance in implementing this program. [Video shows Shevyakov followed by outside shot of building]

### Ukraine Coal Reserves Could Last 200-300 Years

AU0408091892 Kiev Radio Ukraine World Service  
in Ukrainian 1300 GMT 3 Aug 92

[Text] Ukrainian specialists believe that our coal reserves will suffice for the development of power engineering in our republic for a period of between 200 and 300 years. However, as they point out, Ukraine must be oriented toward progressive technologies of coal burning that are highly effective and are practically harmless for the environment.

With regard to atomic power engineering, Ihor Yuhnovskyy, academician and people's deputy, believes that it must not be developed by way of building new atomic electric power plants, but that capital must be invested in improving the safety of those currently in operation, until they are replaced by plants with reactors similar to those used in Canada.

### Ukraine Ministry Bans Loading of Chemicals at Il'yichevsk

LD1008191792 Moscow Mayak Radio Network  
in Russian 1400 GMT 10 Aug 92

[Text] The Ministry for the Preservation of the Environment and Natural Resources of Ukraine and its specialized section for the protection of the Black Sea have banned as of today the loading of chemicals in the port of Il'yichevsk near Odessa. The equipment in use at the port for over 20 years provides for the open method of

loading onto ships and that inflicts irreparable damage on the environment and gives rise to protests from the inhabitants of Il'yichevsk.

## CAUCASUS/CENTRAL ASIA

### **Azerbaijan Government Concerned as Caspian Sea Rises**

*LD0608223992 Moscow ITAR-TASS in English  
1101 GMT 6 Aug 92*

[By AZERINFORM correspondent Natan Barskiy—TASS]

[Text] Baku, August 6 (TASS)—Azerbaijan's Government has allocated subsidies to help areas suffering from the consequences of the growing water-level of the Caspian Sea.

The water-level has increased up to 2 metres over the past fifteen years. As a result, fields and highways are flooded in the Lenkoran Region, nearly a half of the fishermen's settlement of Narimanabad is submerged. The sea has closely approached a local railroad.

Refugees are fleeing from flooded areas. Over 800 families in three coastal regions will have to be removed from their houses.

Strong measures are needed to prevent houses and industrial facilities from being destroyed by the sea.

Azerbaijan's Prime Minister Ragim Guseynov described the situation here as critical and took urgent measures to reinforce the system of coastal defence.

Azerbaijan's Cabinet of Ministers adopted a resolution to allocate 25 million roubles to the Lenkoran Region in the south of Azerbaijan.

Scientists predict that the water-level of the Caspian Sea will continue to grow and by the year 2020 it is expected to rise by 4-5 metres. There are forecasts that as a result of the earth's cooling and, consequently, the reduction of the sea's evaporation, an excess of sea water will amount to 80,000 cubic kilometers a year.

### **German TV Visits Secret Nuclear Test Hospital in Kazakhstan**

*AU1208101992*

[Editorial Report] Mainz ZDF Television Network in German at 2010 GMT on 11 August carries a 46-minute report, entitled "Radioactivity—the Fateful Silence; Kazakhstan's Secret Hospital Opens Its Archives," by Minette von Krosigk and Joerg Apfelbach.

The German television team visited Hospital Nr. 4 in Semipalatinsk, which was established by the military in 1961 and where doctors secretly examined thousands of people to see the effects of nuclear tests on people's health. The reporter says that over the past 40 years

"almost 500 nuclear tests" took place in the area, "more than 100 bombs were detonated above ground, before the eyes of the defenseless population." About 1 million people reportedly live in the area surrounding the nuclear test site.

In 1990 the hospital officially ceased its examinations. The German reporters were the "very first" outsiders permitted to visit the hospital. Now it is called "Kazakh Institute for Radiology and Ecology," but the director remained the same, Dr. Boris Ivanovich Gusev. The reporter notes that more than 30,000 reports on patients and about 40,000 samples are stored in the hospital archives. The annual research reports, which are still top secret, are kept in safes.

Director Gusev is shown presenting to the journalists a map of radioactive contamination and noting that it is the "very first time" that this map has been shown to journalists. Illustrating his explanations with the map, Gusev says: "This map was drawn up as early as in 1963, but it has never been accessible to the general public, neither the public abroad nor the mass media or the doctors in our country. As I have told you, this map shows the nine most important and strongest explosions, which took place between 1949 and 1963. The 1949 explosion was the first one. It took place on 29 August. The bomb that was exploded on the test site had a capacity of 18 to 20 kilotons. The wind blew northeast. As a result of immense low cloud, enormously large territories were contaminated by radioactive fallout. These included the territory of the Altai district, the area of Semipalatinsk, and eastern Kazakhstan. The levels were so high that they were comparable to the actual conditions of a nuclear war, a real nuclear war. According to our calculations, the explosion of 1949 alone contaminated at least 100,000 people."

The reporter goes on to describe how the patients were examined. Diagnoses were told neither to the patient nor to his doctor, but "served exclusively military and scientific interests. Even when the disastrous effects of the nuclear tests on the population became obvious, the reports remained secret and the hospital kept collecting data as usual."

Gusev is shown pointing out files of patients who live very close to the site of the tests, and describing their illnesses. The reporter notes that there are "still no exact statistics" of deaths among these people.

The television team then visits various highly contaminated villages to talk to eye-witnesses of the explosion. The most affected places are Kuchatov, which is "practically inaccessible," Moystik, Dolon, Chereomushkiy, Sarshall, and Kainar.

The journalists, accompanied by Gusev, visit Moystik, Chereomushkiy, Sarshall, and Kainar, where they are shown severely handicapped children, whose handicaps are reportedly due to radioactive contamination of their parents. During the first visit, to Moystik, Gusev stresses that the severely mentally and physically handicapped

boy they see there is "certainly not an isolated case." "One can assume with 100-percent certainty that this is the effect of the ionizing radiation on the mother's organism."

The reporter notes that "according to the hospital's statistical research, hereditary diseases due to radiation damage to the chromosomes are about 3.5 times as frequent in the contaminated areas as among the normal population far away from the test site. Dr. Gusev's statistics, which have so far not been permitted to be published, also prove severe damage to the health of adults. The life span among the contaminated people is clearly shorter. In the contaminated areas twice as many people suffer from high blood pressure and heart attacks than far away from the test site. The immune system is considerably weaker. Infectious diseases are increasing, the incidence of tuberculosis is rising. Over the past 20 years there have been more cases of cancer, and benign tumors are also found quite often."

In Kainar the journalists visit the district hospital, where, it is said, there is a lack of personnel, equipment, and pharmaceuticals and as a result the medical treatment is reportedly deficient. The hospital is responsible for the medical treatment of 10,000 people, even though it is designed only to deal with a catchment area of 3,000 people. The reporter notes that "according to the unanimous statements of the doctors, the general state of health of the people is deteriorating." It is noted that fatalities among babies and children are increasing. Soil samples of the area reportedly show 2,000 times higher radioactivity than normal.

The journalists then talk to a former radio operator at the nuclear test sites, who now works as a shepherd because he has been sick since 1956. The man says that the doctors have always played down his sickness, he does not receive treatment or financial support, and his family is also sick.

There follow various eye-witness reports of nuclear tests with interspersed film clips of such tests.

The report continues with shots taken again at Hospital Nr. 4, where Gusev shows a radiometer that indicates radioactivity in the air. He describes the procedures in case of alarm, but points out that the equipment did not yet exist when nuclear tests were made above ground, because the building was not yet there. Gusev shows samples that were tested for radioactivity. The reporter notes that all kinds of substances were tested and can still be found on the shelves; Gusev explains how these tests were carried out by showing the various pieces of equipment used. The data was top secret and only available to the Army and to the government in Moscow, it is pointed out.

Then Gusev opens a safe to show medical reports, which, according to him, have never been shown to anyone apart from those who ordered them. He shows several of these reports and explains their purpose. The author of the first major report in 1958, Dr. Saym Balmukhanov,

confirms the authenticity of his report, which he now sees for the first time since he wrote it, and describes his work at that time. Subsequently, Gusev describes Balmukhanov's report, noting that the report went to Moscow and the government decided that Balmukhanov was wrong, because the result was so negative. Another expedition was sent and the Moscow report of 1960 contradicted Balmukhanov's report.

The journalists then visit the collection of the medical museum in Semipalatinsk, where deformed fetuses with, for example, two heads or only one eye are conserved. The director of the children's hospital in Semipalatinsk is interviewed and says that such deformities should be diagnosed before birth and that the institute should concentrate on examining the groups that are most at risk.

Children with severe sicknesses are shown in the hospital. The director notes that the state of health of children in this district is deteriorating. A chronic weakening of the immune system, the so-called "nuclear AIDS," is becoming increasingly common.

The cemetery in Semipalatinsk is then shown, where many graves of young children and of adults who died relatively young can be seen.

The report concludes with scenes of a wedding, of babies in the Semipalatinsk hospital, and of an old man, who describes how much of Kazakhstan has been destroyed.

### **Kazakhstan Radioactive Dumps Increasing**

*PM1308083392 Moscow IZVESTIYA in Russian  
11 Aug 92 Morning Edition p 1*

[Oleg Stefashin report: "Radioactive Dumps Growing in Kazakhstan"]

[Text] Karaganda—Improvised dumps of radioactive waste have begun to grow in Kazakhstan due to the lack of special burial facilities.

They are appearing like mushrooms after the rain, in most unexpected and sometimes populous areas, moreover, on the outskirts of cities and even in apartment block courtyards. Although the radioactive "waste" most frequently comprises used industrial instruments or components containing powerful sources of ionizing radiation, this by no means reduces the danger inexorably looming over people.

Here is what V. Slavgorodskiy, head of the Kazakh Ministry of Ecology and Bioresources Radiation Ecology Directorate, said at a scientific and practical seminar on problems of radiation ecology and radiation security.

"The radiation situation in the republic is extremely alarming and is continuing to deteriorate. Whereas previously we had virtually no problems with radioactive waste burial installations—the waste was taken to Chelyabinsk, Krasnoyarsk, and Zagorsk—now we do not know what to do with it. Russia is refusing to accept the

dangerous freight and we do not have any so-called burial facilities of our own."

Kazakhstan's only radioactive waste burial site is situated near Alma-Ata and belongs to the Institute of Nuclear Physics. But its structure is in breach of one of two main safety conditions—that it be watertight—and, in scientists' opinion, it cannot be used. Naturally enterprises that have lost the opportunity to destroy the contaminated waste themselves are dumping it just anywhere, and the special services do not always succeed in finding it.

At the moment, regrettably, you get the impression that this problem is not frightening anyone very much apart from scientists. Judge for yourselves. Back in 1979 the Kazakh Council of Ministers adopted a special resolution on building burial centers for radioactive waste in five oblasts. But the resolution was simply not carried out.

Only Tselinograd Oblast embarked on the construction of a burial facility and work here was subsequently stopped in response to demands from an enraged public. The upshot was that the virtually complete installation was handed over to an organization that decided to use it to store potatoes.

In March 1990 the republic's Council of Ministers made another attempt to set up its own network of burial facilities. However, this too proved abortive as it "failed to win support at local level."

It is strange that a population frightened by the danger of radiation is actively protesting at the construction of burial installations, completely forgetting that radiation sources scattered all over the place present far more of a threat to them. The result is that radiation phobia is increasing in Kazakhstan and, along with it, the number of ad hoc dumps.

According to specialists from the Radiation Ecology Directorate, contaminated "waste" with a total yield of more than 200,000 curies has already piled up in the republic, which, as you know, contains major production units extracting radioactive raw materials. This is almost 70 times above the designated norm, and it is easy to see that this may disrupt the ecological balance at any minute.

The Kazakh Government cannot be said to have reconciled itself to this state of affairs. L. Artseva, chief specialist at the republic's Goskonomkomitet [State Economic Committee], said that the Ministry of Ecology and Bioresources has formulated another program for the construction of burial installations. This has been approved by the Cabinet of Ministers, but it is unclear whether it will be implemented.

### **Law on Aral Sea Catastrophe Provides Benefits for Affected Citizens**

*LD1308211292 Moscow Programma Radio Odin Network in Russian 1500 GMT 12 Aug 92*

[Text] A law of the Republic of Kazakhstan was published today on social protection for citizens suffering as a result of the ecological catastrophe in the Aral Sea area. The law is designed to provide social protection for the inhabitants of the Aral Sea area. It defines their status and stipulates the level of compensation and benefits for individuals in need of social rehabilitation.

The levels of allocation for medical services in the area are increased by 50 percent. Wages, pensions, grants, and allowances of those living in the zones affected by the ecological catastrophe are increased by a similar amount.

All those working in these areas are granted 12 working days of additional holiday. Pensioners are provided annually with free vouchers for sanatoriums and rest homes. Benefits and compensation are retained by those who have decided to leave the Aral Sea zone. They are ensured priority allocation of plots of land and interest-free loans for house construction.

## **BALTIC STATES**

### **History of Lithuania's Green Movement Reviewed**

*92WN0700A Vilnius LITHUANIAN WEEKLY in English 3-8 Jul 92 p 3*

[Article by Alis Balbierius: "A Short History of the Lithuanian Greens"]

[Text] The Greens Movement in Lithuania emerged in 1988. From the very start, it was a strong impulse to embark on the road of openness, democracy, freedom of speech and press, and national liberalization. Earlier, the people in the Soviet Union, as well as in the whole of Eastern Europe, were banned from assembling in any kind of voluntary and free organizations.

The first ecological clubs, "Zemyna" in Vilnius and "Atgaja" in Kaunas, were established before the start of the national revival movement Sajudis in 1988.

During the last decades of distorted Soviet industrialization, Lithuania found herself to be on the verge of ecological disaster. All data about air and land pollution were made secret, in spite of the fact that the people were well aware of the mucky waters, filthy soil and sooty forests surrounding them. Concern over ecological issues managed to crack the wall of the Soviet empire through which the rest of political, ethnic and social demands broke into the open.

In July-August of 1988, two large-scale ecological marches were held in Lithuania. The first was organized by the "Atgaja" club from Kaunas. Thousands of people boated down the rivers of Lithuania staging pickets of protests on the way. The mass-meeting in Kaunas

attracted 60,000 demonstrators, while at the final meeting in Klaipeda, on 5 August, Saulius Gričius, the initiator of the march, read out the "Rescue Program" which outlined the objectives and principles of the Lithuanian Greens Movement:

"...The ecological situation in Lithuania is catastrophic! We have distanced ourselves from nature and deem that we are the gods. The question we are facing is: to survive or to destroy ourselves? ... We announce the birth of the Greens Movement in Lithuania." Here are the results of a sociological research conducted at the protest meeting in Kaunas: a unanimous YES to the Greens Movement!"

### The Green Euphoria

Following the first impressive marches, the Greens movement spread throughout the whole of Lithuania. Greens clubs and groups were set up in practically every city and town raising ecological and political demands to the local authorities.

In September of 1988, thousands of people from various countries on the Baltic coast joined hands around the Baltic Sea declaring the first Sunday of each year to be the Baltic Day. "Life Ring" was yet another imposing event when people from all over Lithuania encircled the territory of the Ingalina Nuclear Power Plant, the most dangerous Chernobyl-type power generating facility in Lithuania.

In autumn of 1988, the constituent congress of the Greens Movement was held then elected the first Coordination Council and adopted an appeal calling on all the people concerned about ecological problems to unite.

At the very start of their movement, the Lithuania Greens adopted the basic principles and ideas of the international ecological movement, developing at the same time their own outlook on various problems. For example, in Lithuania the Greens set up antimilitary objectives as well. In 1988, a picket of protest was staged in front of a Soviet military base near Kaunas.

The Greens were the first to propose that Lithuania be declared a demilitarized and non-nuclear zone, and that the Soviet troops be withdrawn from the Lithuanian soil. In the summer of 1989, the Kaunas "Atgaja" club held an all-Lithuanian ecological and anti-military "Peace March" demanding to dismantle Soviet military bases and airfields. The same year, the Greens staged a Children's Disarmament Day with thousand of kids dumping their toy tanks and guns.

The first years of the Greens' activities were filled with euphoria. They coincided with the national revival movement and the "singing Baltic revolution." The following ominous political developments, the economic blockade and the Soviet aggression prevented the Greens from implementing their projects.

### Greens in the Struggle for Independence

Having spread all across Lithuania and having gained great public support in the years 1988-1989, the Greens movement underwent a serious crisis later on. The reasons were both internal and external, all of them linked with Lithuania's struggle for complete independence.

The Greens did not manage to create a clear-cut organizational structure of their movement. Internal differences and the consequent establishment of the Greens Party split the movement. During the elections campaign to the Lithuanian Parliament in 1990, the Greens won 11 seats. It was expected that the Greens set up their parliamentary faction. However, the split in their political views deepened even further, and the Green MPs did not even manage to set up a united front within the parliamentary committee on environmental protection. The movement lost contact with many of its backed MPs.

Following 11 March Independence Act, the Kremlin imposed an economic blockade on Lithuania cutting it off from crude oil supplies and considerably reducing shipments of natural gas. The Greens, who until then had fought against environment polluting enterprises, suspended their actions of protest so as not to hinder Lithuania's struggle for freedom.

The years 1990 and 1991, when Lithuania walked on a tight-rope over an abyss of economic and political destruction, were unfavorable for resolving ecological problems. The structure of the Greens movement was weakened and the ranks of the Greens thinned out with many activists joining other parties and movements. But the Greens continued their activities by celebrating the Earth Day, holding various events, organizing ecological camps for children and publishing the newspaper ZALIOJI LIETUVA [Green Lithuania].

The current crisis in the Greens movement has been partly evoked by a new political situation in the country with Lithuania gaining independence. Now, all environment polluting industrial and power generating facilities have become the property of the Lithuanian state. And the Greens have found themselves to be unprepared for this turn of events neither politically nor psychologically. In spite of the fact that the ecological situation in Lithuania has deteriorated in the past few years, the Greens have to reevaluate their standpoint in view of the ever changing political and economic situation. Optimism is giving way to realistic thinking.

### Green Hopes

With economic and political reforms under way in Lithuania, it seems that environmental protection is once again becoming a second-rate issue for the state. It took 18 months to enact the Law on Environmental Protection.

The Greens staged a mass demonstration in front of the Parliament in April of this year, on Earth Day, to support the idea of an ecologically clean and democratic Lithuania. The demonstrators also raised concrete questions about privatization in state-protected territories.

Realizing that Lithuania now faces a grave economic crisis and political instability, the Greens prefer constructive and positive activities. At numerous meetings with Cabinet members, conservationists have submitted

their specific proposals for keeping Lithuania ecologically clean without impeding economic improvement.

The Greens hope that when the political and economic situation becomes stable enough, they will find an appropriate place in the social life of Lithuania similar to that of developed Western countries.

Today, the Greens speak out for early elections to the Lithuanian Parliament and are planning to nominate their own candidates.

## FRANCE

**Tire Recycling Operation First in France**92WN0662A Paris LE MONDE in French 14 Jul 92  
p 24

[Article by Roger Cans: "Mobilization on Waste"]

[Text] *Under the impetus of the Environmental and Energy Control Agency, manufacturers are mobilizing to treat and recycle residues.*

For the last two months, the furnaces of the Lafarge Cements factory in La Malle (Bouches-du-Rhone) have been burning an average of 6,000 old tires a day. The tires are being used as surplus fuel to burn the unhydrated lime that will go into the cement. The operation is a first in France. Yet manufacturers in Japan, followed by those in the United States, Germany, Austria, and Switzerland, have been doing this for 15 years. In France, it took 10 years to get the recycling of old tires off the ground.

In the early 1980's, the National Agency for Waste Recovery and Elimination (ANRED) tried to find a way to recycle old tires. Officials came up with the idea of grinding them into a "rubber waste" to extract the unburnable metal carcass. The effort was a flop, as the grinding process made the tire fuel much too expensive. In 1983, the Estaque Lafarge factory near Marseille began to burn tires, but the plant was closed the following year due to relocation of personnel.

The only other attempt was made in 1990 under the aegis of Peugeot and the French Scrap Iron Company. A shop to "disassemble worn-out cars" was set up, and the "crushed automobile remnants"—a mixture of small pieces of tire, foam, plastic, and dirt—were sent to a Vicat Cement Works factory to be burned as surplus fuel.

But no production line worthy of the name burned whole tires in France until last May. Lafarge Cements first made sure that it had a large enough supply of tires. The Estaque dumping ground was reopened three years ago to build up a reserve large enough to allow continuous, round-the-clock burning all year long. The region, Regional Directorate of Industry and Research (DRIRE), and the Marseille Chamber of Commerce all helped set up a tire-collection network. Finally, a cleverly put-together financial deal made it possible to install a tire depot and burning facility in La Malle. Lafarge Cements invested 14 million French francs [Fr] with amortization of five years; the Environmental and Energy Control Agency (ADEME), ANRED's successor, loaned Fr1.5 million; the regional council offered Fr1 million; and the tire industry trade union kicked in another Fr1 million.

For Fr200 a metric ton, "carcasses"—the people who sort through tires to be retreaded or destroyed—can come dump unusable tires at the La Malle factory. The

tire example shows, if any demonstration is needed, how difficult it is to set up an industrial structure for recycling waste. That is why the report Paul-Henri Bourrelrier has just published is worth taking a look at. Mr. Bourrelrier, who is the former general director of the Bureau of Geological and Mining Research (BRGM), the president of the Central and Southern Coal Mines, and a mining engineer, scanned the field of research into waste treatment and recycling. It is not a very large field at the time moment since big companies such as General Water and Lyonnaise-Dumez Water just started taking an interest two years ago.

The Bourrelrier report recommends that ADEME run the entire program, including both public and private research. ADEME will be given an annual budget of Fr75 million to do the job, including 40 million from ministries with jurisdiction over it (research, environment, and industry), and 35 million from the new tax on waste-site deposits slated to take effect next year. ADEME also plans to obtain Fr15 million from the Brussels Commission by responding to GD 12 (research) or GD 11 (environment) bid invitations. Indeed, the agency can help companies draft and present their dossiers<sup>1</sup>. This would give ADEME Fr90 million to launch and run research programs devoted entirely to waste treatment.

The circular of December, 1991 obligates 1,750 French firms to file a report with their prefecture on how they produce and eliminate waste. It would thus be very much in their interest to contact ADEME or associations created under its aegis. Examples include RECORD (Network for Cooperation in Waste Research) in Lyon and Angers, and the Health Toxicology network in Grenoble. Companies may also address inquiries to ECRIN (Industrial Research Exchange and Coordination), an association that is presided by Lyonnaise-Dumez's research director, Thierry Chambolle.<sup>2</sup> The association has created specialized "CRIN clubs", for packaging and waste neutralization among others.

## Footnotes

1. ADEME, 27 rue Louis-Vicat, 75357 Paris Cedex 15. Tel: 47-65-20-00.

2. ECRIN, Maison de la Chimie, 28 rue Saint-Dominique, 75007 Paris. Tel: 45-50-48-11. Fax: 47-53-02-91.

**Oxygenation System for Seine River Operational**92WN0675A Paris LE FIGARO in French 20 Jul 92  
p 8

[Article by Jean-Paul Croize: "Some Bubble Machines To Save the Seine"]

[Text] *For the struggle against pollution of the river. The first barge destined to oxygenate the river has just been put into service in Paris.*



Thanks to this barge and the bubbles it exudes into the waters of the Seine under the Argenteuil bridge, fish downriver from the capital will no longer have to die after violent storms. That is at least the hope that recently inspired the Interdepartmental Syndicate of Greater Paris to install, on a trial basis, two river oxygenation systems at locations particularly menaced by pollution.

"It's similar to the principle used in an aquarium where you force air into the water to improve its quality," say the engineers in explanation of the pilot oxygenation units that have just been put into service: one (at the Argenteuil bridge) under the technical supervision of the Air Liquide company; the other, based at Rueil-Malmaison, with the help of Linde Gaz Industriel.

The barge at the Argenteuil bridge draws in water which is then oxygenated on board by a saturation system and returned to the river. By contrast, the one located at Rueil-Malmaison works entirely under water with an on-board compressor forcing oxygen into a series of perforated pipes set on the river bottom. Both have the same objective: "to inject oxygen periodically into the Seine at the most critical times in order to create survival pockets where fish can come on their own to take refuge," says Philippe Galy, director of environmental protection services for the municipality of Paris.

The Seine is still being polluted by liquid waste from the greater Paris area, though the last 20 years have seen enormous strides in purification of such wastes. Nevertheless, the stretch of river considered most fragile—downstream from the capital, along the 50 kilometers between Suresnes (Hauts-de-Seine) and Mantes, in the Yvelines—is still vulnerable to two main categories of pollution: first, visual pollution, including both floating plastic waste and the oily films that create an iridescent surface slick; second, runoff pollution carried by storm sewers emptying into the river.

#### Violent Storm

The second type of pollution is by far the more dangerous: Every time there is a violent storm, several hundred million cubic meters of rain completely wash away the hydrocarbons deposited by automobile traffic on roofs and streets. Sometimes, in a matter of hours hundreds of tons of unburned hydrocarbons are carried into the river in this way with a doubly pernicious effect: first of all, creation of a thick surface film of organic particles that completely blocks oxygenation through exchange with the atmosphere; then, below the surface, a violent process of eutrophication occurs—a sudden proliferation of diverse micro-organisms that in just a few hours consume all the available oxygen, asphyxiating the fauna and flora. The result of that process is a real ecological disaster. Some 32 varieties of fish—including perch, tench, gudgeon, and trout—are being ravaged by all this pollution.

A study of the river ecosystem conducted by CNRS [National Scientific Research Center] has shown that in

response to this sort of accident, which has occurred with unusual frequency in the last four years, fish are crowding into what might be called "survival pockets": zones close to watergates and areas where numerous barges anchor—quite simply because the propellers churning up the water improve oxygenation. The idea of the Paris municipal authorities is thus to create more of these zones artificially. But the real solution—much more difficult—will be to purify the rainwater before dumping it back into the river—for example by installing reservoir filters under the city streets as the commune of Verneuil (in the Yvelines) has just begun doing recently on an experimental basis.

#### Low-Level Incident at Cattenom Nuclear Plant Reported

*LD2408205292 Paris France-Inter Radio Network in French 1600 GMT 24 Aug 92*

[Text] Following an incident which took place at Cattenom nuclear power station in the Moselle department, the French Electricity Company [EDF] has ordered a number of inspections in all the power stations of mainland France. The Cattenom incident did not have any serious consequences but is nevertheless classified as level two on the six-level scale of nuclear incidents. A filter from the drainage circuit of the reactor well was simply found at the bottom of Cattenom power station's tank. The filter had been there for a year. It had been forgotten. We have details from Eric Felix of Radio France Nancy:

[Felix] The filter had been placed at the bottom of the tank to trap minute particles as routine work was being carried out. It had been lying there for a year, and it was found due to a stoppage for the section to be refuelled. What the power station's officials call a quality defect has been classified as level two on the scale of nuclear incidents, of which there are six, the sixth being equivalent to the Chernobyl accident in 1986.

The presence of this filter could have affected the operation of the circuit, the EDF communique specifies. It is a circuit used only in the event of accidents, but it has had no effect on safety. Sections [tranches] two and three, which have already been checked, have not shown any abnormalities. Section four will be inspected this evening. In short, it is just a brief episode, says Cattenom, but a very useful one in learning a certain number of lessons. In any case EDF has decided to carry out investigations of the same kind in the other French power stations.

#### GERMANY

#### Prospects for Reducing Truck Emissions Reviewed

*92MI0559A Wuerzburg UMWELTMAGAZIN in German Jun 92 pp 36-37*

[Article by Gerd Zimmermann: "Automobiles are Getting Cleaner—Manufacturers Try Out Environment-Compatible Techniques"]

[Text] Under the pressure of stringent exhaust-gas limit values, which are due to be introduced in stages from 1992 onwards for utility vehicles throughout the EC, the search of the vehicle manufacturers for automobile concepts with low exhaust emissions is in full swing. Practical solutions are in sight: For example, direct injection into the combustion chamber and alternative regeneration methods for soot filters.

According to EC headquarters in Brussels, the future for utility vehicle manufacture will, above all, have to be a future of lower exhaust emissions and less fuel. Whereas vehicle technology in the automobile sector is gradually becoming less damaging to the environment, the vast majority of freight vehicles is still lagging behind. In Germany alone, 42,000 tonnes of carbon particles and 570,000 tonnes of  $\text{NO}_x$  are discharged into the atmosphere annually through their exhaust pipes. Compared with total traffic volumes, this equates to a particle proportion of 70 percent, the proportion of nitrogen monoxide being approximately 31 percent.

In the former federal laender, the proportion of freight traffic accounted for by trucks is already more than 56 percent, with an increasing trend. Freight transportation will increase as a result of the completion of the EC internal market, the opening up of the Eastern European countries, and the increasing use of just-in-time deliveries. The federal government is requiring that limit values for utility vehicles over 3.5 tonnes be reduced in three stages throughout the EC.

#### Reductions in Stages

In the first stage, starting in 1992-93, nitrogen monoxide emissions are to be reduced to 9 g/kWh and particle emissions to 0.4 g/kWh. In the second stage, starting in 1995-96, the  $\text{NO}_x$  emissions will have to be reduced by 40 percent, and particle emissions by 60 percent. The limit values of the third stage, starting in 1998-99, are to be defined before 1995.

In order to reduce emissions effectively, the strategy is for: improved engines, optimized drive trains, reduced road resistances, and efficient post-treatment of exhaust gas.

As things stand today, the greatest potential is to be found in measures within the engine, such as improved supercharging and direct fuel injection into the combustion chamber. Direct injection requires extremely high injection pressures through multi-hole nozzles of the utmost precision. Just by using more sophisticated nozzle systems and more efficient adaptation of the turbocharger, it has already been possible to reduce nitrogen monoxide levels by 25 percent, hydrocarbon emissions by 55 percent, and both carbon monoxide and particles by 45 percent. A further reduction in exhaust values can be achieved by means of fully electronic engine management. Particle filter systems also help. The filter comprises a large number of perforated tubes around which ceramic yarn is wound. They are arranged axially in a stainless steel muffler. The exhaust gas flows

from the outside inwards through the windings, and the particles settle out on the ceramic yarn.

Superficially, this appears very simple, but achieving effective carbon particle filtration is a high-tech business. One of the problems of carbon filtration relates to the extreme minuteness of the particles that have to be separated out. Approximately 50 percent of all particles are smaller than 0.00007 millimeters. To obtain 9 percent precipitation, all particles down to 0.00004 millimeters must be filtered out.

However, the particles collected in the filter do not burn spontaneously at the low exhaust gas temperatures of the energy-saving, direct-injection diesel engines for utility vehicles. They have to be eliminated by means of a special regeneration process, which also ensures that the filter does not become clogged.

In recent years, development has concentrated on three burning-off methods:

- A special burner or a supplementary heater upstream of or in the filter elevates the temperature needed for combustion of the carbon particles
- Temporary increases in engine capacity and the catalytic coating of the ceramic body cause the carbon particles to burn. (A thin layer of copper oxide is applied to the ceramic yarn to act as a catalyst and reduce the spontaneous ignition temperature of the particles from 600° C to approximately 250° C.)
- Liquid additives are added to the fuel or injected directly into the soot filter. They lower the combustion temperature necessary for burning off.

#### Extensive Tests

All these solutions are at present undergoing extensive testing. Ceramic soot filters with integral burners are being tried out in municipal vehicles. The dual-filter system, in particular, promises to be successful here. If either of the filters is clogged with carbon particles, it switches off automatically, and the second filter assumes the cleaning role. The clogged filter has time to regenerate. A burner connected upstream burns the carbon residues accumulated in the filter with an open flame.

The third solution could be used for freight vehicles and automobiles alike. Dosing the diesel fuel with a ferri-ferrous additive can considerably reduce the ignition temperature of the particles accumulated in the exhaust-gas particle filter. This chemical aid to ignition should be added in a ratio of 0.09 liters to 10 liters of fuel.

The main method of reducing engine noise today is by reducing engine speed. The prerequisite for this is an ample torque characteristic. New cam shapes and improved channel and pipe guides improve gas exchange and boost the volume of combustion air. Even with a lowered nominal speed, performance is retained with this method, or may even be improved.

### **New Waste Disposal System Promotes Recycling**

92WN0669A Hamburg *DIE WELT* in German  
9 July 92 p 7

[Article by Andreas Muhs: "Germans Gladly Cut Back on Trash in Exchange for Cash"]

[Text] Essen—Each citizen produces about 400 kg of refuse per year. Collection, transport, and disposal in the old laender alone cost 4 billion German marks [DM] annually. A disposal emergency is looming because the remaining useful life of most of the landfills for domestic waste in the old laender is only three to five years.

Many people see only desperate attempts at a solution in the Green Dot campaign and the packaging ordinance from the Minister for the Environment, because there is no guarantee of acceptance and smooth introduction. Now Ruhrkohle AG is bringing the "computerized trash can" into action as the latest miracle weapon in the fight against the increasing waste resulting from affluence.

In initial tests of the "Heureka" system from Ruhrkohle Umwelt GmbH in 700 households in Baesweiler near Aachen, household waste was reduced by more than 30 percent. This is how the trash alternative works: A special computer chip can be attached to every conventional trash can. It is set in a plastic block measuring 4 cm by 4 cm. The name, address and bank affiliation of the owner of the can are stored on this simple chip. The capacity of the trash can (80, 120, 200, or 400 liters) is also stored.

A special scanner for the microchips, with which the trash receptacle can be identified during the emptying process, is mounted on the trash truck itself. A computer evaluates the data and stores the results on a diskette. Later, the exact, customer-specific bill is written up at the central data processing office of the waste collection service. For anyone having his trash can picked up only every two weeks, information is stored only half as often. Credit is given for collection-free weeks; at the end of the year a check is mailed out.

Dr. Eberhard von Perfall, CEO of Ruhrkohle Umwelt GmbH, said: "Anyone avoiding waste now, is rewarded—with money. That shows results, in contrast to appeals to reason. In the test we gave a credit of 2 German marks [DM] for each trash can that did not have to be emptied."

An evaluation of the results from Baesweil shows: Household waste is reduced by 32 percent. In the same period, 17 percent more metal ended up in the collection bins, 20 percent more glass, and as much as 60 percent more paper was brought for recycling.

Von Perfall continued: "More than 90 percent of the persons involved in the test asked for the trash cans to be converted permanently to the Heureka computer system. And it is comparatively inexpensive. Ruhrkohle Umwelt would charge DM18 for each trash can. For that price we convert the trash cans, install the computer to do the

evaluation, and instruct the trash collectors in the use of the computer." Because the company is anticipating an enormous influx of orders, quantities are already being stockpiled. "Cities and communities that order the system today will have it delivered and installed at the latest in six months," says von Perfall.

In about one year Ruhrkohle subsidiary Umwelt plans to be far enough advanced to have considerably refined the scanner on the trash trucks. It is supposed to be able to record the precise amount of refuse in the trash can. So far, the scanner can only read in the data for the refuse producer and the trash can. Up to now, an exact registration of the amount has been made only on a flat-rate basis, according to the size of the trash can, but later it will be carried out according to the weight of the refuse.

### **Minister Claims Serious Damage Done by CIS Troops**

LD0408094192 Berlin ADN in German 0301 GMT  
4 Aug 92

[Text] Bonn (ADN)—Environment Minister Klaus Toepfer describes the environmental damage caused by CIS troops in eastern Germany as "very serious." A final balance sheet cannot yet be drawn up, but one can assume that a figure of 10 billion [currency not specified] or more will be needed, the Christian Democratic Union politician told ADN.

In order to avert danger to the population, immediate measures have been taken in 134 cases. The federal authorities have supplied 500 million German marks for this. Toepfer argues in favor of the military sites of the CIS troops being inspected early, before their withdrawal from the former GDR. The two-month deadline negotiated with the Federal Government is not sufficient to document the full extent of the environmental pollution, the minister stresses.

### **German Specialists To Study Russia's Radioactive Contamination**

LD1708183792 Berlin DDP in German 1128 GMT  
17 Aug 92

[Text] Bonn (DDP)—The Federal Republic will support Russia this year and next year in the investigation of radioactive contamination of the Ural region with humanitarian aid to the tune of 3.3 million marks. On 18 August German radiation protection experts will travel on a Russian transport aircraft to Chelyabinsk in the Urals with a measurement vehicle with several radioactivity measuring devices, announced the Federal Environmental Ministry in Bonn today. Environmental samples and food in the region, where a serious accident took place in 1957 during the production of nuclear weapons, are to be investigated for radioactive contamination.

The situation with regard to the health of the people in the region is bad, according to the ministry's information. They are the third generation to live in the radioactively contaminated environment.

### Trade Official Criticizes Toepfer for Regulations

AU1808125192 Munich SUEDEUTSCHE ZEITUNG in German 18 Aug 92 p 24

["fro" report: "Regulations for Industry in Top Speed"]

[Excerpt] Bonn—Michael Fuchs, president of the Federal Association of German Wholesale and Foreign Trade (BGA), has criticized the policy of FRG Environment Minister Klaus Toepfer (Christian Democratic Union). In an interview with SUEDEUTSCHE ZEITUNG, Fuchs did welcome the polluter-pays principle of the cycle economy [Kreislaufwirtschaft], which is propagated by Toepfer and according to which industry, importers, and sellers must accept responsibility for their products from production to disposal. However, the individual regulations are hitting "the German companies at top speed all at once." An interlaced political consideration of the environmental measures is lacking, he said.

The president of wholesale and foreign trade, the biggest German economic sector after industry, recalled that, after the packaging regulation, now the waste paper regulation, the electronic data processing scrap regulation, the electronic scrap regulation, the battery and old car regulation, and the fifth amendment to the waste disposal law, which goes far beyond the packaging regulation, are being discussed or are facing adoption.

### The Consequences

Fuchs accused the politicians of having missed the necessary political steps. Now there is a "fateful pressure of time," because in "1995-96 most waste disposal sites will be full and new disposal sites are hardly expected to be built." In addition, sensible burning of waste is often prohibited. In Fuchs' view, the regulations could be accepted individually, "but they can hardly be implemented all at once."

In the BGA president's view, Toepfer's regulations do not just have considerable consequences for the affected companies. Many of the regulations make it indispensable for industry to act in lock-step. If, for instance, 100 percent of transport packaging is supposed to be collected and recycled, as prescribed, this can be done only by means of large-scale, expensive disposal systems in harmony with all involved economic sectors. The undesirable consequences on the private disposal sector are strong trends toward concentration. It is no coincidence that the disposal companies are currently "right at the top of the shopping list of electricity producers." [passage omitted]

## NORWAY

### Map Confirming Russian Arctic Nuclear Dumping Received

PM1008135292 Oslo AFTENPOSTEN in Norwegian 6 Aug 92 p 19

[Sveinung Berg Bentzrod report: "Twelve Reactors Were Dumped in the Sea"]

[Text] Russian dumping of nuclear reactors off Novaya Zemlya could have serious consequences for Norwegian fisheries. It has been confirmed that a total of 12 reactors, several containing fuel, were dumped in the years leading up to 1982.

With the information which the so-called Barents group has received from Russia and which the NRK Dagsnytt program reported on yesterday morning, the claims of Norwegian and Russian environmental organizations and of Russian newspapers and politicians over the last few years have finally been confirmed. The nuclear reactors come from submarines and icebreakers, and the majority of them were dumped east of Novaya Zemlya, in the Kara Sea. Of the 12 reactors three still contain fuel—or uranium—and all these are said to have been dumped in the Kara Sea.

Director Knut Gussgard of the State Nuclear Inspectorate, Foreign Ministry Assistant Secretary Torbjorn Norendal, and Environment Ministry adviser Magne Roed—all members of the Barents group—have received a preliminary map from Russia. The map shows the places where the reactors were dumped and the dates of the dumpings. The group, which returns to Norway today, has been the advance party for the main Norwegian expedition which will travel to Russia later this month. The State Nuclear Inspectorate is confident that the map covers all the dumpings of reactors that have taken place, but is unwilling to reveal which bodies prepared the map.

State Nuclear Inspectorate adviser Erling Stranden was concerned to play down the health consequences of the dumping. He thinks it unlikely that the reactors which contain uranium could be started up again where they are lying. The remaining traces of radioactivity in the reactors will either collect in the mud on the sea bed or be dispersed by ocean currents.

Neither this radioactivity nor the low-level radioactive waste in thousands of containers which are said to have been dumped in the same area in the years leading up to 1986 represents any danger to the fish in the area. The doses which could come into contact with the sea water are too small and the quantity of water too great. But the fish could absorb enough to show up in measurements, and as a result the skepticism in the market place will automatically be there, Stranden said. At worst the negative publicity could have major repercussions for Norwegian fishing interests.

The reactor dumping which has been given the broadest coverage in the Western press took place in the early seventies when the reactor from the icebreaker Lenin was dumped off Novaya Zemlya. The reactor had long been useless as a result of an accident, but it did contain uranium.

In addition to radioactive waste from submarines, ice-breakers, and land-based installations, there is also waste that is transported along the Ob river system and radioactivity from nuclear testing, which will be of central interest to the main Norwegian expedition to the northern regions.

## SWEDEN

### Environment Minister Views Future Legislative Action

92WN0648A Stockholm SVENSKA DAGBLADET  
in Swedish 27 Jun 92 p 10

[Interview with Minister of Environment Olof Johansson by Correspondent Hans Correspondent; place and date not given: "Johansson Promises Improvement"]

[Text] While heading for the summer break, Olof Johansson admits in this interview with SVENSKA DAGBLADET that the government has been quiet about the environment during its first legislative year. He promises an improvement by this fall in the form of a "battery" of legislative bills. He charges the Ministry of Finance with ignorance, accuses the EC of forcing a reduction in energy taxes on industry, and claims that the Center Party is alone among the coalition parties in forcing the pace on environmental issues.

[Correspondent] What have you done in the environmental area that the Social Democrats had not already made plans for?

[Johansson] A great deal, but most of it has been a matter of preparing for things to come—for example, fees on soft Freons and chlorine, the environmental classification of fuels, and green national accounting.

[Correspondent] But what about specific bills? No one knows when those you are preparing will be ready.

[Johansson] (laughs) There are a number of government bills all the same: international commitments in the area of nuclear responsibility, a new procedure in accordance with the automobile exhaust law, a change in the government's structure in the field of nuclear waste, and the adoption of protocols against volatile organic matter.

[Correspondent] But those are mostly technical matters. How has the environment improved during this nonsocialist legislative year?

[Johansson] We have tightened up some of the legislative bills left over from the previous government—for

example, as regards the emission of carbon tetrachloride (Editor's note: chlorinated solvent).

[Correspondent] Are there more examples?

[Johansson] Yes, but I don't remember them so well that I can rattle them off to you. The efforts we are making to increase the safety of Russian reactors are tangible, of course, and we also have the energy tax agreement—and it is not defensive, as some people claim.

We are increasing energy taxes. They are dropping by 3.4 billion kronor for industry but increasing overall to 4 billion kronor. That difference of 500 million kronor is what the Ministry of Finance calls my "pocket money" for bioenergy, wind energy, and the Baltic Sea.

[Correspondent] How is the environment helped by drastically lower taxes on industry?

[Johansson] Well, it is not helped by that, but we are lowering taxes for reasons of competitiveness.

[Correspondent] What you are doing is shifting the energy tax from industry to the consumer. Is that fair?

[Johansson] Yes, it is necessary. Environmental management by households is increasing, true, but not the tax burden, since the value-added tax has been reduced.

[Correspondent] So the consumer must bear the energy burden, but not industry, is that right?

[Johansson] That is a statistical approach. Would the consumer prefer to be unemployed? If so, he may damn well not be able to consume anything. If Swedish industry cannot compete with the rest of the world, we might as well give up. We have strengthened competitiveness and encouraged bioenergy.

[Correspondent] How can you say that? Don't lower energy taxes encourage the continued use of oil?

[Johansson] Yes, but what I am saying is that that is what we are going to spend 500,000 kronor on: subsidizing renewable energy. We will revise the price relationships, give investment subsidies to bioenergy facilities, and so on.

[Correspondent] But you often say that the environmental effects will be visible in the price. And now you are going to grant selective subsidies instead of simply making fossil fuels more expensive.

[Johansson] And why is that so? Well, because the aspiration level in the world around us is so appallingly low in the environmental area. The EC is not even able to introduce a very low tax on carbon dioxide.

That creates a competitive disadvantage for Swedish industry that we cannot just ignore. If the EC had introduced a fee, I would have been able to slow the tax relief for our industry.

[Correspondent] The environment was one of four cornerstones of the government statement. It is hard to believe that now, considering how quiet things have been.

[Johansson] That's right, and the reason is that our big battery is coming now. We have been working on it for a year—it takes time.

[Correspondent] Is there any power in the battery?

[Johansson] I have the pile of papers here, full of new bills: the recurring bill as early as this fall and one on environmentally dangerous waste, stricter environmental laws, environmental damage insurance, an action plan against noise, nitric oxides, environmental research, biotechnology, and so on.

[Correspondent] The government statement also mentioned instruments for management. I have not seen a single environmental fee.

[Johansson] The reason is very simple: the Ministry of Finance demands studies—studies first. Now they exist, so the fees are coming.

[Correspondent] This past spring you and Anne Wibble discussed how the chlorine fee would be used. Can you tell us now?

[Johansson] I want to levy an environmental fee on the Swedish and Finnish pulp industries and use it to rescue the Baltic Sea. It might amount to a couple of million kronor per year. The one that pollutes should also pay for the cleanup, which will cost a total of 150 billion kronor over 20 years.

That money should be used where it is needed most, and that is why the chlorine fee should not go back to Swedish industry.

[Correspondent] Will the idea be dropped if Finland doesn't go along with it?

[Johansson] We will have to decide that when the time comes.

[Correspondent] Is it hard to get environmental decisions approved by the government?

[Johansson] I don't think so, but there are constant conflicts with the Ministry of Finance, which I think is quite ignorant about environmental matters.

[Correspondent] And people there think the Ministry of Environment should hire a few economists so you can talk to each other.

[Johansson] Ha! They can talk to me; I am as well trained in economics as a lot of people over there, so I don't need any further assistance. For that matter, I have not noticed that they are particularly impressive when it comes to economics.

[Correspondent] They are not good at economics either?

[Johansson] No, they are bad at making the connection between economics and ecology, and that is where the conflicts arise. If you don't take long-term environmental responsibility into account in your short-term calculations—and that is what the Ministry of Finance fails to do—you create an environmental debt, which some people think can be ignored.

The problem is that the bill becomes so much more greater if you wait until people die or get sick. The outstanding example here is the Baltic Sea, of course. The Ministry of Finance does not understand that.

And now the Ministry of Finance is spreading rumors that I should blame, for example, Social Democrats who work in the Ministry of Environment for the fact that it is so hard to produce legislative bills. I can assure you: the obstacles are not to be found there.

[Correspondent] You want to transfer an official in the Ministry of Finance who you say meddled with your speech in Rio de Janeiro and wrote an article criticizing Sweden's action. Isn't it cowardly to attack the messenger instead of Wibble?

[Johansson] Well, she should accept responsibility, of course, for her staff and see to it that we don't have to deal with him anymore.

[Correspondent] But if one assumes that he did not act without his boss' consent, shouldn't you be demanding that Wibble be removed instead?

[Johansson] If that article had the backing of the ministry's top people, it is a disgrace. I am assuming that it didn't.

[Correspondent] Which coalition party is most interested in the environment?

[Johansson] Well, that I don't know. There are individuals from various parties who push the issue, but within the government it is we and no one else.

[Correspondent] No one besides the Center Party, you mean?

[Johansson] Well, I haven't noticed any other party.

[Correspondent] What must Sweden change as a result of the meeting in Rio de Janeiro?

[Johansson] We must work out a course of action covering a greater variety of issues and come up with an action plan against greenhouse gas by next March. That may mean that we will have to change the current strategy on climate.

[Correspondent] You don't have a strategy on climate, do you?

[Johansson] Well, it is a little diffuse. We no longer have a specific Riksdag decision. The intention, of course, was that we would coordinate our reduction of emissions with the rest of Europe, but now each of the EC countries seem to be coming up with its own plans. We will have to study it—we really need an action plan.

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